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SEPTEMBER 1980 NUMBER 433 -- Part I

P.A STACKS

Solar-Geophysical Data prompt reports

Data for August 1980 -- July 1980 & Late Data

Explanation of Data Reports Issued as Number 426 (Supplement) February 1980

Late Data Pages 157-168

noaa NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION / ENVIRONMENTAL DATA AND INFORMATION SERVICE / BOULDER, COLORADO

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Solar - Geophysical Data

NO. 433 SEPTEMBER 1980

Part I (Prompt Reports)

DATA FOR
MARCH 1980

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SOLAR-GEOPHYSICAL DATA

No. 433

Issued in two parts

Helen E. Coffey, Editor

J. Virginia Lincoln, Chief
Solar-Terrestrial Physics Division

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A.10d	43 cm East-West Solar Scans (Fleurs)	421A 29	422A 29	423A 31	424A 29	425A 28	426A 27	427A 27	429A151	429A 26	430A 30	431A 29	432A 28	433A 26
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C.4h	Solar Radio Spectral Obs. (Dwingeloo)	422A149	426A143	425A130	426A125	427A117	427A126	429A116	429A120	430A126	431A126	432A133	433A132	
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C.4j	Solar Radio Spectral Obs. (Manila)	422A149	---	424A130	425A125	426A117	427A126	---						
C.4k	Solar Radio Spectral Obs. (Learmonth)	422A149	423A143		425A125		427A126	428A116	429A120	430A128	431A126	433A158	433A132	
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D.1ba	27-day Chart of Kp Indices	422A172	423A168	424A149	425A146	426A135	427A150	428A137	429A144	430A157	431A153	432A160	433A152	
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D.1f	Sudden Commencement and Solar Flare Effects	422A177	423A172	425B 33	425A150	427A164	427A152	431A168	431A168	431A169	433A168	433A168		
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F.1c	Cosmic Ray Neutron Counts (Alert)	422A165	423A161	425B 32	427A159	427A159	428A146	429A153	429A137	430A154	432A170	433A165		
F.1h	Cosmic Ray Neutron Counts (Thule)	422A165	423A161	424A146	425A143	426A132	427A147	428A134	429A137	430A154	431A150	432A155	433A147	
F.1i	Cosmic Ray Neutron Counts (Kiel)	422A165	423A161	427A159	425A143	426A132	427A147	428A134	429A137	430A154	431A150	432A155	433A147	
F.1j	Cosmic Ray Neutron Counts (Tokyo)	422A165	423A161	427A159	425A143	426A132	427A147	428A134	429A137	430A154	431A150	430A155	433A147	
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H.	MISCELLANEOUS													
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H.6Z	Abbreviated Calendar Record													

Notes:

"422A 52" listed under 1979 Aug means that the sunspot drawings for Aug 1979 were contained in *Solar-Geophysical Data* Number 422 - Part I, beginning on page 52.

A = Part I, B = Part II.

----- = no data available.
blank = data not yet received.

SGD 433 Part I (Prompt)

AUGUST 1980 DATA

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ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

AUGUST 1980

PRESTO MESSAGES (THE RAPID REPORT OF MAJOR EVENTS)

03 AUGUST 1980 PRESTO BOULDER 03/1323Z MAGNETIC A VALUE EXPECTED TO BE GREATER THAN 30 ON 03 AUGUST
06 AUGUST 1980 PRESTO KAKIOKA 06/0235Z MAGSTORM 06/0010Z
10 AUGUST 1980 PRESTO BOULDER 10/2125Z TENFLARE 450 FLUX UNITS 10/2100Z DURATION 10 MINUTES
11 AUGUST 1980 PRESTO TOYOKAWA 11/0055Z TENFLARE 720 FLUX UNITS 10/2101Z DURATION 14 MINUTES
13 AUGUST 1980 PRESTO BOULDER 13/1310Z SOFLARE M3/2B S27E44 13/1307Z DURATION 40 MINUTES
TENFLARE 1204 FLUX UNITS 13/1247Z DURATION 30 MINUTES
21 AUGUST 1980 PRESTO BOULDER 21/1931Z SOFLARE M7/2B N20W14 21/1852Z DURATION 28 MINUTES
22 AUGUST 1980 PRESTO BOULDER 22/2201Z SOFLARE M2/2B N13E50 22/2123Z DURATION 15 MINUTES
27 AUGUST 1980 PRESTO BOULDER 27/1351Z MAGNETIC K=5 27/0600-0900Z AND K=6 27/0900-1200Z
31 AUGUST 1980 PRESTO BOULDER 31/1442Z TENFLARE 1100 FLUX UNITS 31/1249Z DURATION 10 MINUTES
31/1451Z SOFLARE M6/2B S05E41 31/1335Z DURATION 40 MINUTES

SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions				Outstanding events	Forecasts			Alert Situations
						Location Lat-Long	No. of Flares Total	M	X		Date	Location Lat-Long	Desc*	
214	01	31	125	133	006	S08W26	0	0	0		01	S08W26	E	SOLQUIET
						S19W24	0	0	0			S19W24	Q	MAGQUIET
						N19W17	0	0	0			N19W17	Q	
						N27W13	0	0	0			N27W13	Q	
						N12W09	0	0	0			N12W09	Q	
						S36E09	0	0	0			S36E09	Q	
						N18E33	0	0	0			N18E33	Q	
						S30E36	0	0	0			S30E36	Q	
						N14E71	0	0	0			N14E71	Q	
						S07E71	0	0	0			S07E71	Q	
215	02	01	116	128	006	S08W43	1	0	0		02	S08W43	Q	SOLQUIET
						N19W31	0	0	0			N19W31	Q	MAGQUIET
						S08W29	0	0	0			S08W29	Q	
						N27W27	1	0	0			N27W27	Q	
						S37W03	0	0	0			S37W03	Q	
						N18E18	0	0	0			N18E18	Q	
						S31E23	0	0	0			S31E23	Q	
						N07E50	0	0	0			N07E50	Q	
						S09E52	0	0	0			S09E52	Q	
						N13E56	0	0	0			N13E56	Q	
216	03	02	115	128	008	S07W59	1	0	0		03	S07W59	Q	SOLQUIET
						N19W44	0	0	0			N19W44	Q	MAGQUIET
						S09W43	0	0	0			S09W43	Q	
						N30W37	0	0	0			N30W37	Q	
						S34W17	1	0	0			S34W17	Q	
						N18E09	1	0	0			N18E09	Q	
						N12E45	0	0	0			N12E45	Q	
						S07E46	0	0	0			S07E46	Q	
						S14E67	0	0	0			S14E67	Q	
217	04	03	124	129	027	S08W73	0	0	0	Presto Boulder 03/1328Z Magnetic activity A greater than 30 expected.	04	S08W73	Q	SOLQUIET
						S09W58	0	0	0			S09W58	Q	MAGQUIET
						N18W57	0	0	0			N18W57	Q	
						N26W52	1	0	0			N26W52	Q	
						N11W47	0	0	0			N11W47	Q	
						N20W08	0	0	0			N20W08	Q	
						S20E23	0	0	0			S20E23	Q	
						S07E29	0	0	0			S07E29	Q	
						S19E57	0	0	0			S19E57	Q	
						S05E43	0	0	0			S05E43	Q	
218	05	04	073	127	008	S08W87	1	0	0		05	S08W87	Q	SOLQUIET
						N25W65	0	0	0			N25W65	Q	MAGQUIET
						N11W60	0	0	0			N11W60	Q	
						N08E09	0	0	0			N08E09	Q	
						S05E30	0	0	0			S05E30	Q	
						S11E44	0	0	0			S11E44	Q	
219	06	05	063	129	005	N11W75	2	0	0		06	N11W75	Q	SOLQUIET
						S05E16	0	0	0			S05E16	Q	MAGQUIET
						S12E33	0	0	0			S12E33	Q	
						S29E64	0	0	0			S29E64	Q	
						N17E72	0	0	0			N17E72	Q	
220	07	06	091	146	013	N11W89	1	0	0	Presto Kakioka 06/0235Z Magstorm 06/0010Z.	07	N11W89	Q	SOLQUIET
						S05E01	1	0	0			S05E01	Q	MAGQUIET
						S12E18	0	0	0			S12E18	Q	
						N18E23	1	0	0			N18E23	E	
						S28E54	0	0	0			S28E54	Q	
						N18E60	0	0	0			N18E60	Q	
221	08	07	130	139	012	S21W29	0	0	0		08	S21W29	Q	SOLQUIET
						N15W14	0	0	0			N15W14	Q	MAGQUIET
						S04W12	0	0	0			S04W12	Q	
						S12E06	0	0	0			S12E06	Q	
						N19E10	0	0	0			N19E10	Q	
						N12E20	0	0	0			N12E20	Q	
						S27E42	0	0	0			S27E42	Q	
						N18E47	0	0	0			N18E47	Q	
						S12E60	0	0	0			S12E60	Q	
222	09	08	129	142	005	S22W43	0	0	0		09	S22W43	Q	SOLQUIET
						S05W26	1	0	0			S05W26	Q	MAGQUIET
						S12W08	0	0	0			S12W08	Q	
						N19W02	0	0	0			N19W02	E	
						N11E06	0	0	0			N11E06	Q	
						S28E30	0	0	0			S28E30	Q	
						N18E33	0	0	0			N18E33	Q	
						S14E47	0	0	0			S14E47	Q	

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223	10	09	201	215	010	S21W57	0	0	0		10	S21W57	Q	SOLQUIET
						S06W41	1	0	0			S06W41	E	MAGQUIET
						S12W21	0	0	0			S12W21	Q	
						N19W15	0	0	0			N19W15	Q	
						N10W08	3	0	0			N10W08	E	
						N18W08	0	0	0			N18W08	Q	
						N24E14	0	0	0			N24E14	Q	
						S27E16	0	0	0			S27E16	Q	
						N18E20	0	0	0			N18E20	Q	
						S13E36	0	0	0			S13E36	Q	
						S26E67	1	0	0			S26E67	Q	
						N05E70	0	0	0			N05E70	Q	
						N14E72	0	0	0			N14E72	Q	
224	11	10	143	169	013	S11W63	1	0	0	Presto Boulder 10/2125Z Tenflare 450 Flux Units 10/2100Z duration 10 minutes	11	S11W63	Q	SOLQUIET
						S06W54	3	0	0			S06W54	E	MAGQUIET
						S12W34	0	0	0			S12W34	Q	
						N19W32	1	0	0			N19W32	Q	
						N11W23	1	0	0			N11W23	E	
						N18W22	0	0	0			N18W22	Q	
						S25W12	0	0	0			S25W12	Q	
						S27E03	0	0	0			S27E03	Q	
						N26E04	0	0	0			N26E04	Q	
						N18E07	0	0	0			N18E07	Q	
						S26E52	3	0	0			S26E52	Q	
						N05E55	0	0	0			N05E55	Q	
						N14E56	0	0	0			N14E56	Q	
						S12E61	0	0	0			S12E61	Q	
						S29E76	1	1	0			S29E76	E	
225	12	11	209	179	008	S12W76	1	0	0	Presto Toyokawa 11/0055Z Tenflare 720 Flux Units 10/2101Z duration 14 minutes.	12	S12W76	Q	SOLQUIET
						S06W69	2	0	0			S06W69	E	MAGQUIET
						N18W44	0	0	0			N18W44	Q	
						N10W35	0	0	0			N10W35	Q	
						N25W11	0	0	0			N25W11	Q	
						S28W10	1	0	0			S28W10	Q	
						N18W06	0	0	0			N18W06	Q	
						S22E25	2	0	0			S22E25	Q	
						N04E42	1	0	0			N04E42	E	
						N13E44	5	0	0			N13E44	E	
						S11E50	0	0	0			S11E50	Q	
						S26E65	3	1	0			S26E65	E	
						N14E71	0	0	0			N14E71	Q	
						S22E75	0	0	0			S22E75	Q	
226	13	12	242	185	009	S07W81	2	0	0		13	S07W81	Q	SOLQUIET
						N18W59	0	0	0			N18W59	Q	MAGQUIET
						N11W49	0	0	0			N11W49	Q	
						N24W24	0	0	0			N24W24	Q	
						S27W22	0	0	0			S27W22	Q	
						N18W19	0	0	0			N18W19	Q	
						S16E03	0	0	0			S16E03	Q	
						S21E11	0	0	0			S21E11	Q	
						N06E29	0	0	0			N06E29	E	
						S09E36	2	0	0			S09E36	Q	
						N14E39	0	0	0			N14E39	E	
						S25E51	2	0	0			S25E51	E	
						N15E60	1	0	0			N15E60	Q	
						S21E60	0	0	0			S21E60	Q	
227	14	13	225	190	005	N18W73	0	0	0	Presto Boulder 13/1310Z Soflare M3/2B S27E44 13/1307Z Duration 40 Minutes. Tenflare 1204 flux units 13/1247Z Duration 30 minutes.	14	N18W73	Q	SOLQUIET
						N11W61	0	0	0			N11W61	Q	MAGQUIET
						S27W35	0	0	0			S27W35	Q	
						N18W32	0	0	0			N18W32	Q	
						N05E17	2	0	0			N05E17	E	
						N14E19	1	0	0			N14E19	E	
						S08E24	0	0	0			S08E24	Q	
						N11E39	0	0	0			N11E39	Q	
						S26E39	3	1	0			S26E39	E	
						S21E46	0	0	0			S21E46	Q	
						N12E48	0	0	0			N12E48	Q	
						N16E65	0	0	0			N16E65	Q	
						S12E66	0	0	0			S12E66	Q	
						S15E84	0	0	0			S15E84	Q	
228	15	14	255	192	011	N18W88	0	0	0		15	N18W88	Q	SOLQUIET
						N12W75	0	0	0			N12W75	Q	MAGALERT 15/16
						S27W48	0	0	0			S27W48	Q	
						N19W45	0	0	0			N19W45	Q	
						N05E01	0	0	0			N05E01	E	
						N13E05	0	0	0			N13E05	E	
						S10E09	0	0	0			S10E09	Q	
						S26E24	1	0	0			S26E24	E	
						N12E27	1	0	0			N12E27	Q	
						S21E32	1	0	0			S21E32	Q	
						N14E33	0	0	0			N14E33	Q	
						S09E43	0	0	0			S09E43	Q	
						N15E49	0	0	0			N15E49	Q	
						S12E53	0	0	0			S12E53	Q	
						S15E66	0	0	0			S15E66	Q	

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						Location Lat-Long	No. of Flares Total	M	X		Date	Location Lat-Long	Desc*	
229	16	15	286	.187	007	S29W61	0	0	0		16	S29W61	Q	SOLQUIET
						N18W58	0	0	0			N18W58	Q	MAGALERT MINOR 16
						S18W45	0	0	0			S18W45	Q	
						N04W12	0	0	0			N04W12	E	
						N13W10	0	0	0			N13W10	Q	
						S10W03	0	0	0			S10W03	Q	
						S26E11	11	0	0			S26E11	E	
						S14E11	0	0	0			S14E11	Q	
						N12E13	3	0	0			N12E13	E	
						S21E20	0	0	0			S21E20	Q	
						N17E23	0	0	0			N17E23	Q	
						S09E30	0	0	0			S09E30	Q	
						N16E34	1	0	0			N16E34	Q	
						S11E41	2	0	0			S11E41	Q	
						N10E48	0	0	0			N10E48	Q	
						S13E53	0	0	0			S13E53	Q	
						N17E66	8	0	0			N17E66	E	
230	17	16	269	191	020	S27W75	0	0	0		17	S27W75	Q	SOLQUIET
						N18W72	0	0	0			N18W72	Q	MAGNIL
						N04W27	0	0	0			N04W27	E	
						N13W24	1	0	0			N13W24	Q	
						S11W18	0	0	0			S11W18	Q	
						S26W03	2	0	0			S26W03	E	
						N11E01	4	0	0			N11E01	E	
						N06E01	0	0	0			N06E01	Q	
						S25E06	1	0	0			S25E06	Q	
						N15E07	0	0	0			N15E07	Q	
						S09E16	0	0	0			S09E16	Q	
						N16E21	0	0	0			N16E21	Q	
						S11E27	0	0	0			S11E27	Q	
						N09E34	0	0	0			N09E34	Q	
						S13E40	0	0	0			S13E40	Q	
						N17E53	6	0	0			N17E53	E	
231	18	17	271	200	010	N17W86	0	0	0		18	N17W86	Q	SOLQUIET
						N04W41	0	0	0			N04W41	Q	MAGQUIET
						N11W41	2	0	0			N11W41	Q	
						S25W17	2	0	0			S25W17	Q	
						N08W14	0	0	0			N08W14	Q	
						N12W13	0	0	0			N12W13	Q	
						S22W06	1	0	0			S22W06	Q	
						S09E03	0	0	0			S09E03	Q	
						N15E10	0	0	0			N15E10	Q	
						S10E15	1	0	0			S10E15	Q	
						N11E20	5	0	0			N11E20	E	
						S12E27	3	0	0			S12E27	Q	
						N19E39	0	0	0			N19E39	E	
						N16E75	0	0	0			N16E75	Q	
232	19	18	278	211	017	N11W55	1	0	0		19	N11W55	Q	SOLQUIET
						N05W54	0	0	0			N05W54	Q	MAGQUIET
						S26W28	0	0	0			S26W28	Q	
						N08W27	0	0	0			N08W27	Q	
						N12W25	1	0	0			N12W25	Q	
						S23W20	0	0	0			S23W20	Q	
						S09W11	2	0	0			S09W11	Q	
						N17W06	0	0	0			N17W06	Q	
						S11E02	0	0	0			S11E02	Q	
						N10E08	4	0	0			N10E08	E	
						S12E14	0	0	0			S12E14	Q	
						N18E25	0	0	0			N18E25	Q	
						N15E62	0	0	0			N15E62	Q	
233	20	19	293	197	019	N03W68	0	0	0		20	N03W68	Q	SOLQUIET
						N11W68	1	0	0			N11W68	Q	MAGQUIET
						S30W61	3	0	0			S30W61	Q	
						S25W42	0	0	0			S25W42	Q	
						N09W41	0	0	0			N09W41	Q	
						N12W38	2	0	0			N12W38	Q	
						S21W32	0	0	0			S21W32	Q	
						S09W25	6	0	0			S09W25	Q	
						N17W19	0	0	0			N17W19	Q	
						S10W12	0	0	0			S10W12	Q	
						N10W07	1	0	0			N10W07	Q	
						S12W01	0	0	0			S12W01	Q	
						N19E12	6	0	0			N19E12	E	
						S21E15	0	0	0			S21E15	Q	
						N15E49	1	0	0			N15E49	Q	

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234	21	20	248	189	011	N03W86	0	0	0		21	N03W86	Q	SOLQUIET
						N12W81	1	0	0			N12W81	Q	MAGQUIET
						S27W75	0	0	0			S27W75	Q	
						S27W55	1	0	0			S27W55	Q	
						N10W53	1	0	0			N10W53	Q	
						S21W45	0	0	0			S21W45	Q	
						S08W40	3	0	0			S08W40	Q	
						N17W30	1	0	0			N17W30	Q	
						S23W30	0	0	0			S23W30	Q	
						N10W20	0	0	0			N10W20	E	
						S13W14	1	0	0			S13W14	Q	
						N20W00	2	0	0			N20W00	Q	
						S22E02	0	0	0			S22E02	Q	
						N15E39	4	0	0			N15E39	E	
						N10E75	0	0	0			N10E75	Q	
235	22	21	217	190	009	N10W68	0	0	0	Presto Boulder	22	N10W68	Q	SOLALERT 22/XX
						S27W68	1	0	0	21/1931Z Soflare		S27W68	Q	MAGQUIET
						S21W58	0	0	0	M7/2B N20W14		S21W58	Q	
						S08W53	0	0	0	21/1852Z Duration		S08W53	Q	
						N17W45	2	0	0	28 Minutes.		N17W45	Q	
						N10W33	0	0	0			N10W33	Q	
						S10W25	0	0	0			S10W25	Q	
						N19W14	5	2	0			N19W14	A	
						S22W04	0	0	0			S22W04	Q	
						N15E25	1	0	0			N15E25	Q	
						N10E60	7	0	0			N10E60	E	
236	23	22	177	177	010	N11W82	2	0	0	Presto Boulder	23	N11W82	E	SOLALERT
						S21W71	0	0	0	22/2201Z Soflare		S21W71	Q	MAGQUIET
						S07W67	3	0	0	M2/2B N13E50		S07W67	Q	
						N17W58	1	0	0	22/2123Z Duration		N17W58	Q	
						N11W47	0	0	0	15 Minutes		N11W47	Q	
						N19W27	2	0	0			N19W27	E	
						N14E11	1	0	0			N14E11	E	
						N09E47	7	1	0			N09E47	E	
						N18E64	1	0	0			N18E64	Q	
						S18E64	0	0	0			S18E64	Q	
237	24	23	190	170	006	S21W87	0	0	0		24	S21W87	Q	SOLALERT 24/XX
						S08W83	1	0	0			S08W83	Q	MAGQUIET
						N17W71	2	0	0			N17W71	Q	
						N09W67	0	0	0			N09W67	Q	
						N19W40	8	1	0			N19W40	E	
						N14W02	1	0	0			N14W02	E	
						N20E08	0	0	0			N20E08	Q	
						S08E12	0	0	0			S08E12	Q	
						S14E18	0	0	0			S14E18	Q	
						N09E34	3	0	0			N09E34	E	
						N19E51	0	0	0			N19E51	Q	
						S17E51	0	0	0			S17E51	Q	
238	25	24	178	163	007	N16W85	2	0	0		25	N16W85	Q	SOLALERT 25/27
						N08W81	0	0	0			N08W81	Q	MAGQUIET
						N19W52	13	4	0			N19W52	A	
						N14W16	4	0	0			N14W16	E	
						N23W02	0	0	0			N23W02	Q	
						S08W01	0	0	0			S08W01	Q	
						N13W06	0	0	0			N13W06	Q	
						S13E07	0	0	0			S13E07	Q	
						N10E20	0	0	0			N10E20	E	
						S17E37	1	0	0			S17E37	Q	
239	26	25	166	152	006	N19W66	13	3	0		26	N19W66	A	SOLALERT 26/27
						N14W28	1	0	0			N14W28	E	MAGQUIET
						N24W18	0	0	0			N24W18	Q	
						N16W18	0	0	0			N16W18	Q	
						S08W15	3	0	0			S08W15	Q	
						S17W07	0	0	0			S17W07	Q	
						N09E08	7	0	0			N09E08	E	
						S18E25	0	0	0			S18E25	Q	
						N11E33	0	0	0			N11E33	Q	
240	27	26	130	151	008	N19W80	3	1	0		27	N19W80	A	SOLALERT 27/28
						S08W30	3	0	0			S08W30	E	MAGQUIET
						S13W21	0	0	0			S13W21	Q	
						N09W07	0	0	0			N09W07	Q	
						S19E11	0	0	0			S19E11	Q	
						N10E20	0	0	0			N10E20	Q	
						S27E25	2	0	0			S27E25	Q	
241	28	27	166	156	015	N19W88	1	0	0	Presto Boulder	28	N19W88	Q	SOLALERT 28/XX
						S07W43	2	0	0	27/1351Z Magnetic		S07W43	E	MAGQUIET
						S15W33	0	0	0	K=5 0600-0900Z and		S15W33	Q	
						N09W21	0	0	0	K=6 0900-1200Z.		N09W21	Q	
						S19W01	1	0	0			S19W01	Q	
						N10E06	0	0	0			N10E06	Q	
						S27E12	1	0	0			S27E12	E	
						S07E74	1	1	0			S07E74	A	
						N12E76	2	0	0			N12E76	E	

SUMMARY

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242
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A=Active

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242	29	28	166	165	006	N23W57	0	0	0		29	N23W57	Q	SOLALERT 29/XX
						S06W60	0	0	0			S06W60	Q	MAGQUIET
						S12W45	0	0	0			S12W45	Q	
						N09W34	0	0	0			N09W34	Q	
						N10W06	2	0	0			N10W06	E	
						S27W01	1	0	0			S27W01	E	
						N18E35	0	0	0			N18E35	Q	
						S07E63	3	0	0			S07E63	A	
						N12E64	5	0	0			N12E64	E	
						S07E74	1	0	0			S07E74	Q	
243	30	29	175	175	003	S05W74	0	0	0		30	S05W74	Q	SOLALERT 30/31
						N09W48	0	0	0			N09W48	Q	MAGQUIET
						N10W20	0	0	0			N10W20	Q	
						S27W13	1	0	0			S27W13	Q	
						N22E01	1	0	0			N22E01	Q	
						S08E08	0	0	0			S08E08	Q	
						N18E19	0	0	0			N18E19	Q	
						S08E49	4	0	0			S08E49	E	
						N12E51	9	0	0			N12E51	A	
						S06E61	2	0	0			S06E61	E	
244	31	30	264	192	008	S05W89	0	0	0		31	S05W89	Q	SOLALERT 31/01
						N09W63	0	0	0			N09W63	Q	MAGQUIET
						N27W57	0	0	0			N27W57	Q	
						N10W33	0	0	0			N10W33	Q	
						S27W26	0	0	0			S27W26	Q	
						N23W10	4	0	0			N23W10	E	
						S08W06	0	0	0			S08W06	Q	
						N18E06	0	0	0			N18E06	Q	
						S07E38	5	0	0			S07E38	A	
						N12E39	10	0	0			N12E39	A	
						S06E47	3	0	0			S06E47	E	
						N12E65	0	0	0			N12E65	Q	
						S10E73	0	0	0			S10E73	Q	
245	01	31	252	208	008	N27W72	0	0	0	Presto Boulder	01	N27W72	Q	SOLALERT 01/03
						N10W47	0	0	0	31/1442Z Tenflare		N10W47	Q	MAGQUIET
						S27W40	0	0	0	1100 flux units Dur-		S27W40	Q	
						N22W26	1	0	0	ation 10 minutes		N22W26	E	
						N18W05	0	0	0	31/1249Z		N18W05	Q	
						N12E24	7	1	0	31/1451Z Soflare		N12E24	A	
						S08E24	5	1	0	M6/2B S05E41		S08E24	A	
						S04E35	1	0	0	31/1335Z Duration		S04E35	A	
						N11E53	0	0	0	40 minutes.		N11E53	Q	
						S11E61	0	0	0			S11E61	Q	
						N14E69	0	0	0			N14E69	Q	

A=Active C=Caution D=Doubtful E=Eruptive MF=Major Flare OG=Other Groups P=Proton Q=Quiet

RELATIVE SUNSPOT NUMBERS

ZURICH, R_z

	1979 FINAL				1980 PROVISIONAL							
DAY	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG
1	165	213	224	122	153	208	181	185	121	152	101	78
2	141	187	157	156	158	187	168	145	149	124	108	63
3	148	167	155	187	148	185	151	133	140	128	97	65
4	157	156	172	218	173	182	136	123	166	141	85	65
5	139	168	166	232	190	178	130	154	192	150	96	53
6	139	168	203	206	207	215	132	185	145	131	98	72
7	170	179	240	212	218	248	120	200	147	149	97	64
8	192	190	280	262	225	230	101	199	157	156	87	90
9	190	210	279	280	262	172	103	229	168	164	78	125
10	177	178	302	260	224	140	69	214	144	168	86	130
11	167	183	295	242	245	148	67	245	142	172	87	181
12	156	189	248	261	210	135	70	257	143	166	98	174
13	175	201	183	235	181	131	71	259	150	161	105	172
14	186	213	218	230	178	146	68	203	166	136	128	193
15	177	198	186	225	146	168	52	182	157	129	161	192
16	163	185	166	215	166	163	36	154	148	134	198	196
17	155	214	238	180	160	132	67	126	173	129	211	190
18	177	224	172	151	130	122	63	127	215	146	241	195
19	195	221	174	138	118	129	119	134	218	166	213	185
20	191	214	153	126	115	139	108	173	230	179	212	179
21	184	209	124	124	121	114	105	143	233	191	217	152
22	178	191	116	111	123	99	130	122	244	196	201	139
23	219	179	142	116	124	100	149	95	246	190	184	154
24	236	161	162	130	120	122	175	112	256	193	155	122
25	252	153	155	143	107	121	176	139	229	179	151	109
26	261	145	141	116	127	152	191	171	220	166	138	101
27	256	136	115	93	128	175	205	156	223	185	117	98
28	239	142	119	98	130	197	221	149	190	188	127	124
29	235	184	98	121	122	181	191	145	170	149	118	158
30	233	190	116	139	145		182	138	150	97	108	184
31		223		135	174		183		138		81	194
MEAN	188.4	186.2	183.3	176.3	162.2	159.3	126.5	166.6	179.7	157.2	135.0	135.4

1979 YEARLY MEAN = 155.4

DAILY SOLAR FLUX AT 2800 MHz
OTTAWA ARO

FLUX ADJUSTED TO 1 A.U., S_a

	1979				1980							
DAY	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG
1	175.8	212.8	211.6	161.9	189.1	212.6*	175.7	181.9	218.5	191.2	160.0*	131.9
2	180.1	211.5	209.5	172.0*	199.9	217.9	172.9	181.1*	223.0	184.0	154.9	131.8
3	180.8	204.7	207.5	195.1*	211.9*	225.7	170.2*	176.1	221.2	178.8	147.7	133.2
4	175.3*	197.7*	214.2	221.0	212.4*	231.7	172.7*	184.3*	223.1*	181.5	146.7	130.9
5	177.1	192.8*	235.5	223.4*	207.7	218.9	171.8	209.7*	221.9	176.4	152.5*	132.6
6	180.4*	195.5	273.2*	223.4	222.1	221.7	169.4	238.4*	203.5	172.4	150.1	143.2*
7	186.3	197.0	286.9*	222.6	228.0	223.9*	166.3	236.1*	203.4	165.7*	152.5	142.3
8	183.6	200.3	310.1	228.9*	228.1*	218.7	164.9	241.7	200.2*	172.4*	152.8	146.4
9	187.4	209.5	314.4*	232.4	240.9*	208.2*	161.3	244.7*	193.6	174.3*	155.2	156.5
10	184.6	208.7	367.0*	230.3	253.0*	204.6*	153.9	249.0	191.1	176.1	162.3*	173.5
11	181.5*	211.8	325.7*	230.6*	255.7*	213.7	147.8	249.9	191.4*	182.9	173.3	184.1
12	181.7	216.4	294.4	232.3	245.1*	213.7	138.6	245.6	189.5	189.3*	178.0	189.6
13	186.1	239.1	272.7	231.7	221.6	217.9	144.6	232.8	192.9	186.5	196.8	193.3*
14	192.6*	236.4	256.4	238.3	203.8	201.0	141.2	226.3	202.9	188.8*	209.7	191.7*
15	193.8	230.7	239.7*	231.8	200.0	201.2*	139.3	206.1*	199.8	186.4	218.4	191.9
16	196.3*	232.3	230.6	216.3	188.6	200.2	137.3	192.4	202.9*	193.3	235.4*	195.7
17	202.7*	226.0	231.8	202.2	186.9	182.8*	142.9	191.9	207.5*	197.4	250.2*	197.7*
18	215.7	236.8	231.9	187.4	177.5	180.0*	147.4	201.4	214.3*	207.6	249.8*	204.3*
19	218.1*	237.3*	214.8	183.0	164.4	177.3	162.3	214.5*	234.2	219.8*	255.2*	201.4
20	213.9*	236.7*	205.9	180.8*	156.5	174.7	162.1	215.8	244.7*	227.9*	258.0	193.0
21	218.4	230.1	189.8	176.7*	153.4	169.6	162.4	207.7	252.6	228.0	254.0	194.1
22	216.5	221.9	182.5	175.3	158.2*	167.3	162.5	199.2	276.6	250.0*	248.7	178.3*
23	224.2*	214.9*	183.2	168.6	166.7	160.1	172.4*	186.2	289.5	251.5	235.1	174.1
24	230.7	225.6*	175.2*	160.2	171.1*	157.2*	172.4	186.3	290.2	245.9*	222.2	164.3*
25	235.5	215.2	165.8*	162.0	171.3*	165.7	182.5*	185.9	292.8	238.8*	206.4	153.8*
26	229.9*	202.9	161.6	159.7	178.8*	169.0	185.2	186.6	284.2	226.3	197.4	154.6
27	228.7*	211.2	155.7	153.6*	190.6*	173.2	195.3*	200.6*	281.2*	212.6	188.4	159.3
28	233.8	210.0	150.1	163.1	194.0	171.7*	203.5	203.7	280.8*	199.7*	169.5	168.3
29	225.0	214.8	154.0	174.0	197.0	176.7*	199.9	203.5*	252.3	188.8	155.3	178.5
30	231.9	213.7*	152.2	185.5	197.9	.	194.3*	200.9	222.7	183.4	143.3	191.4*
31	.	214.9*	.	188.9	213.9*	.	187.2*	.	200.6	.	136.5	198.7*
MEAN	202.3	216.4	226.8	197.2	199.6	195.1	166.5	209.3	229.1	199.3	190.8	170.3

* adjusted for burst
A = interpolated data point

DAILY SOLAR INDICES

AUGUST 1980

	YEAR DAY	BARTELS 27-DAY CYCLE NUMBER	SUNSPOT NUMBERS		OBSERVED FLUX	SOLAR FLUX ADJUSTED TO 1 A.U.								
			R_Z	$R_{A'}$	OTTAWA 2800	AFGL 15400	AFGL 8800	AFGL 4995	OTTAWA 2800	AFGL 2695	AFGL 1415	AFGL 606	AFGL 410	AFGL 245
1	214	16	78	52	128.1	491	289	145	131.9	126	95		33	
2	215	17	63	83	128.0	499	251	135	131.8	126	95		36	
3	216	18	65	68	129.3	493	280	148	133.2	128	104		32	
4	217	19	65	35	127.2	490	309	149	130.9	131	97		37	
5	218	20	53	58	128.9	492	300	146	132.6	126	92		30	
6	219	21	72	89	139.2*	503	335	162	143.2*	130	102		40	
7	220	22	64	81	138.4	501	318	161	142.3	135	95		44	
8	221	23	90	97	142.4	475	287	156	146.4	142	102		35	
9	222	24	125	115	152.2	500	323	169	156.5	147	108		42	
10	223	25	130	132	168.9	510	334	182	173.5	171	125		43	19
11	224	26	181	166	179.3	463	335	191	184.1	179	130		37	
12	225	27	174	167	184.6	509	318	188	189.6	181	144		42	
13	226	1	172	165	188.4*	519	339	199	193.3*	188	132		49	
14	227	2	193	198	186.8*	531	350	193	191.7*	190	142		45	
15	228	3	192	196	187.0				191.9					
16	229	4	196	203	190.9				195.7					
17	230	5	190	195	192.9*	542	322	194	197.7*	207	156		51	
18	231	6	195	203	199.3*				204.3*					
19	232	7	185	200	196.7	488	353	195	201.4	199	135		41	
20	233	8	179	181	188.5	499	313	186	193.0	190	137		39	
21	234	9	152	155	189.7	526	355	205	194.1	192	140		42	
22	235	10	139	116	174.3*	509	352	192	178.3*	173	132		44	
23	236	11	154	125	170.4				174.1					
24	237	12	122	112	160.8*	521	339	183	164.3*	159	107		41	
25	238	13	109	97	150.5*	518	328	168	153.8*	150	105		44	
26	239	14	101	107	151.4	510	299	166	154.6	155	107		46	
27	240	15	98	119	156.0	502	347	182	159.3	148			41	
28	241	16	124	129	165.0	505	343	184	168.3	162	102		45	
29	242	17	158	168	175.0	507	349	194	178.5	174	115		42	
30	243	18	184	178	187.8*	509	369	211	191.4*	187	118		47	
31	244	19	194	179	195.0*	517	378	229	198.7*	208	141		38	
MEAN			135.4	134.5	166.2	505	326	178	170.3	163	118		40	19

* Adjusted for burst.

NOTE: Data gaps in AFGL Sagamore Hill data are due to equipment problems.

OBSERVED AND PREDICTED SOLAR ACTIVITY INDICES

	SUNSPOT NUMBERS						2800 MHz FLUX adjusted to 1 AU	
	Rz		Ra		Rs		Sa	
Date	Monthly Mean	Smoothed	Monthly Mean	Smoothed	Monthly Mean	Smoothed	Monthly Mean	Smoothed
Sep 77	44.0	39	41.9	37	47.0	43	100.9	97
Oct	43.8	46	45.5	44	42.0	49	96.3	103
Nov	29.1	52	28.4	50	36.9	56	91.6	109
Dec	43.2	57	42.8	55	44.8	61	98.9	114
Jan 78	51.9	61	48.8	59	52.6	66	106.1	118
Feb	93.6	64	90.9	61	91.1	69	141.8	122
Mar	76.5	70	73.9	66	89.5	73	140.3	125
Apr	99.7	77	97.5	72	100.5	79	150.5	130
May	82.7	83	79.6	78	99.7	84	149.7	135
Jun	95.1	89	88.0	84	96.5	90	146.8	141
Jul	70.4	97	58.1	92	84.2	97	135.2	147
Aug	58.1	104	48.1	98	64.3	104	116.9	153
Sep	138.2	108	128.1	103	110.4	108	159.6	158
Oct	125.1	111	116.0	105	107.7	111	157.1	160
Nov	97.9	113	92.8	107	98.1	113	148.2	162
Dec	122.7	118	121.0	111	121.6	116	170.0	165
Jan 79	166.6	124	164.4	116	150.2	119	196.5	168
Feb	137.5	131	136.8	123	153.0	124	199.1	172
Mar	138.0	136	132.5	128	136.7	128	184.0	176
Apr	101.5	141	95.8	133	127.0	133	175.0	180
May	134.4	147	121.8	139	120.4	139	168.9	186
Jun	149.5	153	136.4	144	138.9	144	186.0	191
Jul	159.4	156*	140.5	145	123.1	145	171.4	192
Aug	142.2	157*	125.1	144	129.2	145	177.0	192
Sep	188.4	157*	184.0	143	156.5	144	202.3	191
Oct	186.2	158*	178.2	144	171.7	145	216.4	192
Nov	183.3	163*	176.5	149	182.9	149	226.8	196
Dec	176.3	165*	157.6	152	151.0	152	197.2	199
Jan 80	162.2*	165*	146.7	153	153.6	154	199.6	200
Feb	159.3*	163*	131.0	154	148.7	155	195.1	200
Mar	126.5*	162(± 6)*	111.0	153	117.8	154	166.5	---
Apr	166.6*	162(±14)*	148.7	153	164.0	154	209.3	---
May	179.7*	161(±19)*	176.5	152	185.4	153	229.1	---
Jun	157.2*	157(±23)*	158.8	149	153.2	150	199.3	---
Jul	135.0*	153(±27)*	144.7	146	144.1	147	190.8	---
Aug	135.4*	150(±30)*	134.5	143	121.9	144	170.3	---
Sep	---	148(±32)*	---	141	---	142	---	---
Oct	---	147(±33)*	---	140	---	141	---	---
Nov	---	146(±35)*	---	139	---	140	---	---
Dec	---	144(±38)*	---	138	---	139	---	---
Jan 81	---	144(±41)*	---	138	---	139	---	
Feb	---	144(±41)*	---	137	---	138	---	---

*An asterisk denotes a value of the observed monthly mean, or the observed 12-month running mean, or the predicted 12-month average that is based only on preliminary observations of the Zurich relative sunspot number (Rz). Parentheses enclose the 90% confidence limits. Hatched boxes enclose the most recent smoothed values; boxes not shaded enclose predicted values. Ra is the new symbol for R_A'.

SMOOTHED OBSERVED AND PREDICTED SUNSPOT NUMBERS
CYCLE 21

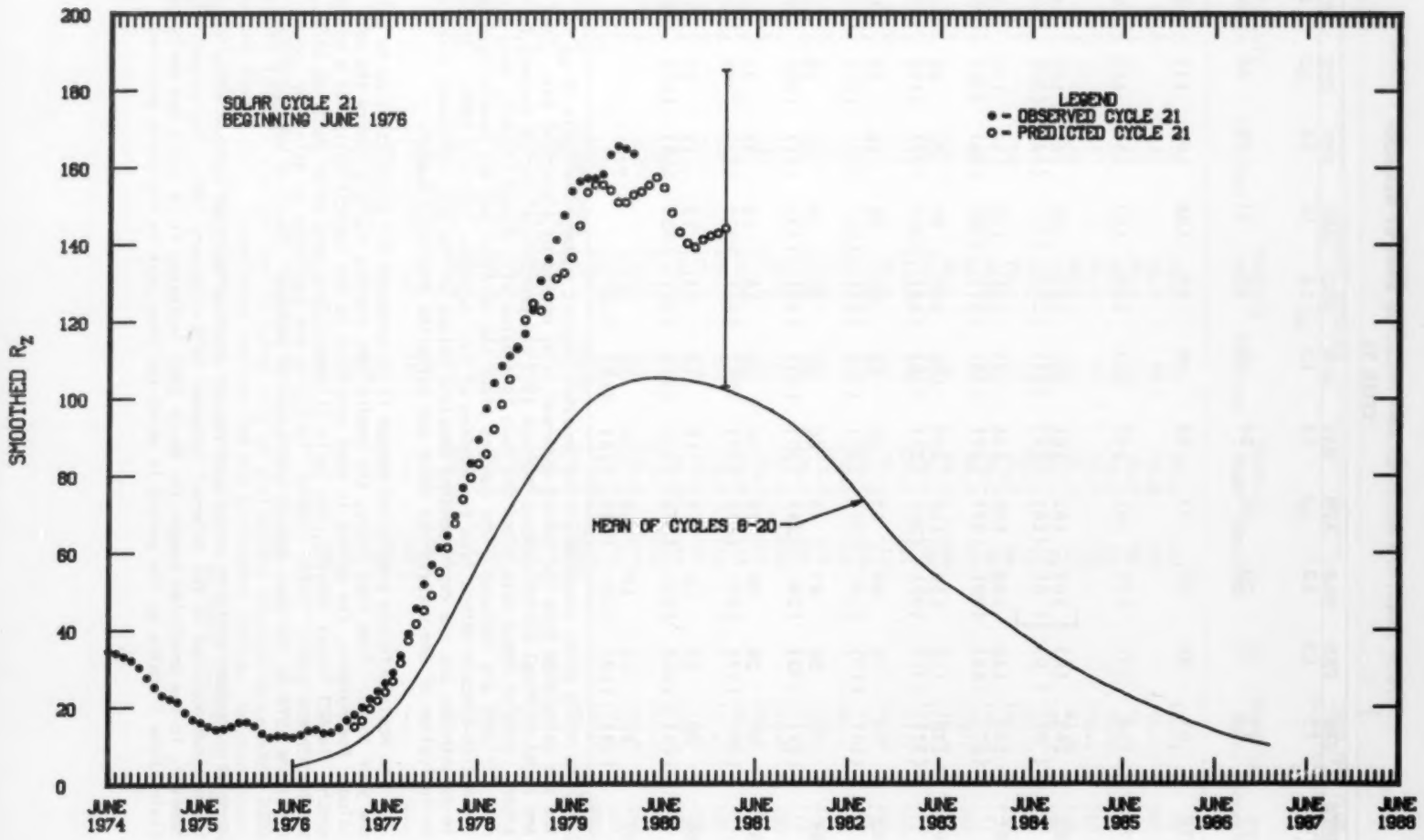
MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1976	15	13	12	13	13	12	13	14	14	13	14	15
1977	17	18	20	22	24	26	29	33	39	46	52	57
1978	61	65	70	77	83	89	97	104	108	111	113	118
1979	124	131	137	141	147	153	156	157	157	159	163	165*
1980	165*	163	162	162	161	157	153	150	148	147	146	144
	(0)	(0)	(6)	(14)	(19)	(23)	(27)	(30)	(32)	(33)	(35)	(38)
1981	144	144	142	139	136	133	131	131	130	128	125	122
	(41)	(41)	(38)	(37)	(37)	(38)	(37)	(36)	(36)	(36)	(35)	(34)
1982	118	115	112	110	107	104	100	95	91	85	82	78
	(31)	(31)	(30)	(29)	(27)	(26)	(23)	(22)	(22)	(19)	(18)	(18)
1983	74	71	69	67	65	62	60	58	56	55	55	54
	(18)	(19)	(19)	(20)	(20)	(22)	(23)	(25)	(27)	(29)	(30)	(30)
1984	52	50	47	43	40	40	39	38	36	34	32	30
	(31)	(30)	(29)	(29)	(30)	(32)	(32)	(32)	(31)	(30)	(29)	(28)
1985	29	28	28	27	26	25	24	23	23	22	21	20
	(28)	(27)	(27)	(27)	(27)	(25)	(24)	(23)	(23)	(24)	(25)	(25)
1986	20	19	18	17	15	14	13	12	11	11	11	11
	(25)	(25)	(25)	(24)	(23)	(21)	(20)	(20)	(18)	(17)	(16)	(14)
1987	11	12	12	13	14	15	17					
	(13)	(12)	(12)	(13)	(14)	(15)	(16)					

The table gives observed Zürich *smoothed* sunspot numbers for Cycle 21 up to the one calculated from the latest observed data, marked by a vertical bar. They are based on final Zürich numbers through 1979 and provisional Zürich numbers thereafter. Some of these data after the June 1976 value will change slightly when final data for 1980 are included. The numbers after the vertical bar are predictions by the McNish-Lincoln method (see *Explanation of Data Reports*, February 1980). Shown in parentheses are the corresponding absolute values of the 90% confidence interval, an indication of the uncertainty above and below the predicted number.

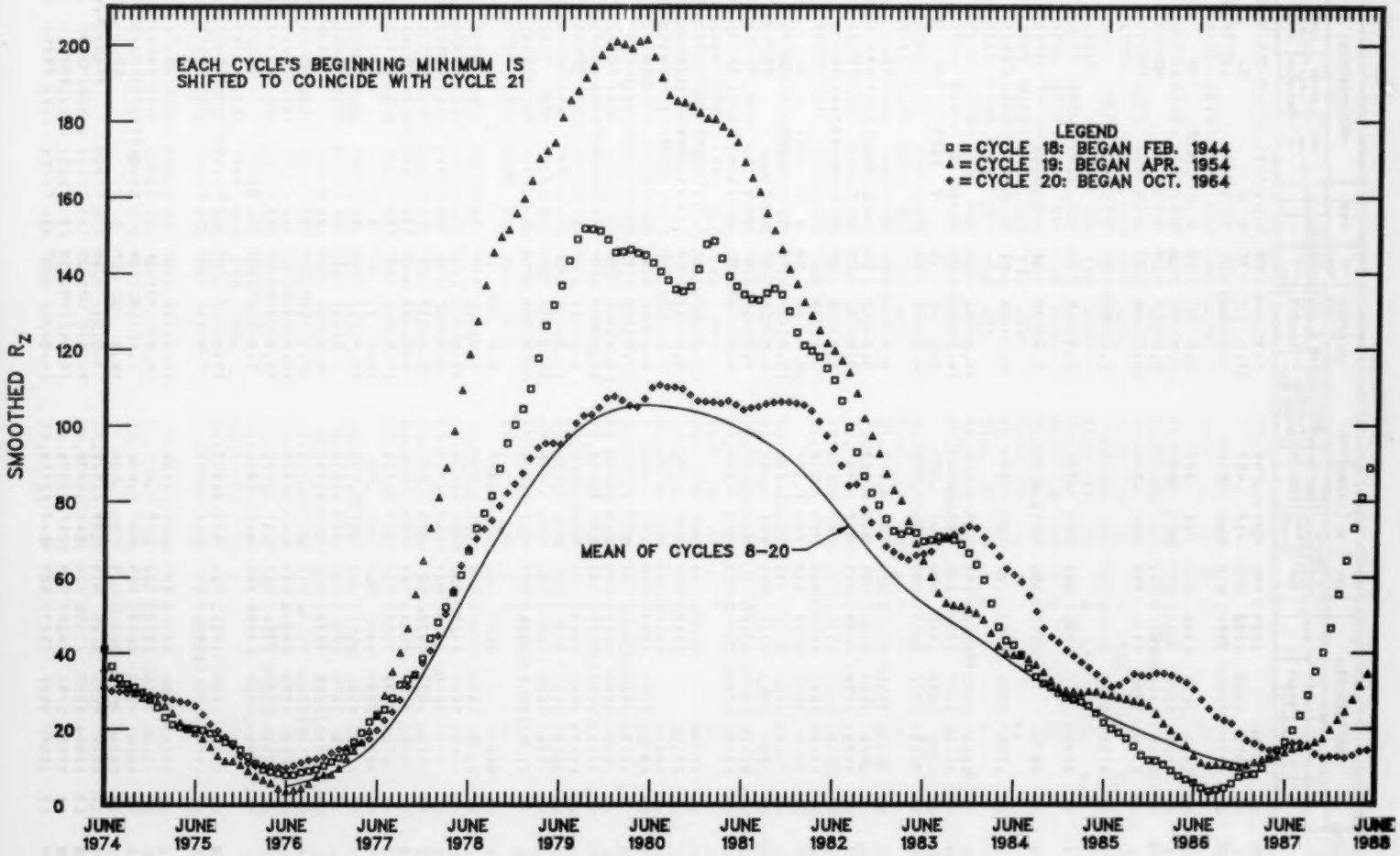
The McNish-Lincoln prediction method is recommended for predictions up to only one year ahead. From that point, the predictions regress rapidly toward the mean value. Furthermore, the method is very sensitive to the identification of a minimum epoch. In SGD issues 390-401, the Cycle 21 predictions were based on March 1976 as the minimum epoch. Later studies, including one published by Waldmeier, show that June 1976 is the more appropriate epoch of minimum. Thus, we adopted a June 1976 minimum.

*MAXIMUM OF SUNSPOT CYCLE 21. The most recent observed smoothed sunspot value suggests the maximum occurred in the interval December 1979 - January 1980. The uncertainty, however, in the predicted number for March 1980 indicates it is still too early to claim these 2 months as the period in which the true peak in the curve occurred.

OBSERVED AND ONE-YEAR-AHEAD PREDICTED SMOOTHED SUNSPOT NUMBERS



SUPERPOSITION OF CYCLES 18, 19, AND 20



15 Aug 80

Hα SOLAR FLARES

AUGUST 1980

OBSERV-ATORY	OBSERVED UT				LOCATION				CMP. DAY	DURATION — MIN.	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. LON. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION				CONG.	TYPE	TIME — UT	MEAS. AREA Mil. of Disk	CORR. AREA Sq. Deg.	
WEND	01	1045E		1059	S30	E30	.718		3.7	140	SN		V		143	2.0	
HOLL	01	2058	2058	2100	N29	W18	.482		31.5	10	SF	3	C		21		
MANI	01	2251E	2254U	2305D	N18	W06	.234		1.5	140	SF	1	V		30	.3	F
BIGB	02	1619	1622	1750	N19	E12	.302		3.6	91	SN	3	C	1622	90	.9	G
HOLL	02	1620	1629	1644	N19	E11	.292		3.5	24	SN	3	C		83		
RAMY	02	1620	1628	1647	N19	E11	.292		3.5	27	SN	3	C		93		
HOLL	02	1757	1800	1815	S10	W56	.848		29.5	18	SF	3	C		20		
BOUL	03	0040E	0128	0130D	S32	W03	.616		2.8	500	1F	0	C				
ISTA	04	0800		0828	N01	E47	.733		7.9	28	SN						E
ISTA	05	0630		0700	S01	E29	.497		7.4	30	SF						E
HOLL	06	1955	2004	2013	S04	E05	.196		7.2	18	SF	3	C		29		
GEOR	07	1026	1036	1040	S20	E90	1.001		14.2	14	SB	1					G
ATHN	07	1134E	1137	1202	S25	E90	1.001		14.2	280	SB	3	C				D
WEND	07	1326	1330	1342	N20	W53	.801		3.6	16	1N		V	1330	171	3.1	
HOLL	07	2000	2001	2008	S19	E84	.998		14.1	8	SN	3	C				
MANI	09	0845E	0845U	0851D	N10	E01	.067		9.4	60	SF	1	V		50	.5	
BIGB	09	1420	1423	1502	N11	W02	.089		9.4	42	SN	3	C	1423	70	.7	
RAMY	09	1422	1426	1453	N11	W03	.097		9.4	31	SN	3	C		28		
BIGB	09	1431	1433	1454	S14	E90	1.000		16.4	23	1N	3	C	1433	70		
RAMY	09	1757	1802	1815	N10	W05	.108		9.4	18	SF	3	C		63		
BIGB	09	2003	2015	2127	S12	E90	1.000		16.6	84	1N	3	C	2015	60		
BIGB	09	2206	2223	2233	S30	E90	1.002		16.7	27	1N	3	C	2223	50		
HOLL	09	2252	2253	2312	S09	W41	.690		6.9	20	SF	3	C		27		
MANI	09	2255E	2255U	2310D	S06	W40	.666		7.0	150	SF	1	V		20	.3	
MANI	09	2345E	2345U	2354D	N10	W08	.152		9.4	90	SF	1	V		30	.3	
WEND	10	0730E		0742D	S04	W48	.755		6.7	120	SN		V	0735	57	.9	D
WEND	10	0745E		0758D	S05	W42	.688		7.2	130	SN		V	0748	114	1.6	D
WEND	10	1233E		1246D	S03	W51	.786		6.7	130	SN		V	1237	114	1.9	D
RAMY	10	1237	1239	1257	S06	W52	.802		6.6	20	SB	3	C		106		
BIGB	10	1803	1806	1825	S27	E90	1.001		17.5	22	1B	3	C	1806	140		
HOLL	10	1902	1903	1910	N09	W19	.326		9.4	8	SF	3	C		27		
BIGB	10	1910	1913	1929	N11	E90	1.000		17.5	19	1N	2	C	1913	60		
HOLL	10	1957	2005	2008	S11	W57	.860		6.6	11	SF	3	C		27		
HOLL	10	2058	2100	2107	S22	E46	.801		14.3	9	SF	3	C		54		
HOLL	10	2102	2103	2125	S20	E74	.976		16.4	23	SN	3	C				
HOLL	10	2128	2140	2156	S23	E50	.839		14.6	28	SN	3	C		138		
ISTA	11	0623E		0657	S08	W61	.887		6.7	340	1N						E
HOLL	11	1453	1455	1459	S24	W81	.995		5.5	6	SF	3	C				
HOLL	11	1719	1719	1728	S27	W04	.554		11.4	9	SN	3	C		26		
PALE	11	1808	1808U	1820	N17	E49	.755		15.4	12	SF	2	C		48		
PALE	11	1919	1923	1932	S20	E29	.628		14.0	13	SF	2	C		50		
RAMY	11	2025	2026	2035	S24	E58	.900		16.2	10	SF	3	C		19		
RAMY	11	2028	2028	2036	N16	E47	.731		15.4	8	SF	3	C		24		
RAMY	11	2030	2030	2041	N07	E44	.691		15.2	11	SF	3	C		28		
HOLL	11	2142	2146	2154	S21	E27	.618		13.9	12	SF	3	C		40		
HOLL	11	2153	2156	2207	S10	W68	.938		6.8	14	SF	3	C		61		
HOLL	11	2157	2158	2232	N15	E47	.730		15.4	35	SF	3	C		37		
PALE	11	2211E	2222U	2224	N16	E47	.731		15.4	130	SF	3	C		30		
MANI	11	2250E	2253	2305D	N15	E47	.730		15.5	150	SF	1	V		50	.8	
PALE	11	2251F	2302U	2304	N16	E47	.731		15.5	130	SF	3	C		40		
HOLL	11	2344	2345	2352D	S06	W59	.868		7.6	80	SN	3	C		73		
BIGB	12	1557	1602U	1610	S14	E90	1.000		19.4	13	1N	3	P	1602	120		
RAMY	12	1755	1755	1805	S13	E38	.675		15.6	10	SF	3	C		27		
PALE	13	0208	0216	0220	S22	E50	.835		16.8	12	SF	3	C		17		
PALE	13	0316E	0316U	0323	N08	E27	.451		15.2	70	SF	3	C		23		
BUCA	13	0625	0633	0643D	N18	E28	.494		15.4	180	1N		C	0633	215	2.5	
MANI	13	0634E	0634U	0637D	N15	E25	.438		15.1	30	SF	1	V		50	.6	F
PURP	13	0649	0655	0746	N16	E30	.513		15.5	57	1B		C		377	4.4	
RAMY	13	1249	1252	1253D	S26	E44	.806		16.8	40	1B	3	C		272		
ATHN	13	1250E	1256	1400D	S28	E45	.824		16.9	700	1B	3	C		270		
RAMY	13	1507	1507	1519	S24	E40	.761		16.6	12	SF	3	C		39		

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
PALE	13	2121	2121U	2137D	N09	E19	.325		15.3	16D	SF	3	C		81		D
ISTA	14	0700		0752	S17	W90	1.001		7.5	52	1B						GE
RAMY	14	1218	1218	1225	S25	E42	.784		17.7	7	SF	3	C		20		
PURP	15	0643	0643	0700	S27	E21	.633		16.9	17	SN		C				
WEND	15	0825E		0858D	S25	E17	.583		16.6	33D	1N		V	0828	228	2.7	E
RAMY	15	1219	1223	1243	S15	E53	.837		19.5	24	SN	3	C		51		
WEND	15	1221E		1234D	S12	E47	.770		19.8	13D	SN		V	1225	114	1.8	D
RAMY	15	1546	1547	1605	S24	E14	.552		16.7	19	SN	3	C		39		
WEND	15	1548E		1745D	S25	E12	.555		16.6	117D	1N		V	1557	228	2.8	E
RAMY	15	1625	1626	1636	N20	E69	.927		20.9	11	SF	3	C		25		
PALE	15	1708	1714	1716	S24	E15	.558		16.8	8	SF	3	C		33		
HOLL	15	1902E	1923U	2013D	N19	E68	.921		20.9	71D	SF	3	C		15		
HOLL	15	2019	2108	2111	N14	E76	.965		21.5	52	SN	3	C		43		
HOLL	15	2023	2028	2033	S25	E12	.555		16.7	10	SN	3	C		76		
HOLL	15	2111	2114	2133	N19	E68	.921		21.0	22	SN	3	C		37		
BIGB	15	2145	2150	2225	N15	E35	.578		18.5	40	SN	3	C	2150	130	1.6	
PALE	15	2146E	2146U	2212D	N16	E36	.594		18.6	26D	SF	3	C		46		
PALE	16	0220	0221	0237	N20	E65	.901		21.0	17	SF	3	C		38		
PALE	16	0241	0243	0256	N10	W10	.181		15.4	15	SN	3	C		127		
HOLL	16	1450	1454	1456	N16	E58	.843		21.0	6	SF	3	C		15		
HOLL	16	1503	1511	1552	N19	E58	.845		21.0	49	SF	3	C		22		
RAMY	16	1603	1604	1628	S24	E14	.553		17.7	25	SF	3	C		44		
HOLL	16	1603	1603	1633	S24	E14	.553		17.7	30	SN	3	C		29		
PALE	16	1806	1808	1822	S24	E03	.512		17.0	16	SF	3	C		59		
PALE	17	0338E	0341U	0345	S24	W05	.517		16.8	7D	SF	3	C		43		
ISTA	17	0738		0805	N19	E52	.788		21.2	27	SF						E
RAMY	17	1219E	1229	1232	N12	W29	.486		15.3	13D	SF	3	C		29		
RAMY	17	1250	1250	1259	N10	E29	.483		19.7	9	SF	3	C		36		
RAMY	17	1326	1334	1336	S17	E26	.573		19.5	10	SF	3	C		60		
RAMY	17	1554	1557	1609	S12	E32	.601		20.1	15	SF	3	C		40		
RAMY	17	1555	1556	1605	N12	E26	.441		19.6	10	SF	3	C		24		
RAMY	17	1710	1710	1730	S13	E33	.619		20.2	20	SF	3	C		21		
RAMY	17	1752	1753	1759	N11	W34	.557		15.2	7	SF	3	C		30		
BIGB	17	1832	1846	1943	N09	E23	.389		19.5	71	SN	3	C	1846	60	.7	
RAMY	17	1832	1836	1851	S12	E30	.577		20.0	19	SF	3	C		41		
BIGB	17	1833	1845	1908	S13	E31	.596		20.1	35	SF	3	C	1845	60	.7	
PALE	17	1845E	1849U	1919D	N11	E24	.408		19.6	34D	SF	3	C		83		
RAMY	17	1847	1849	1853	N10	E23	.390		19.5	6	SN	3	C		28		
RAMY	17	1859	1905	1914	N11	E25	.424		19.7	15	SF	3	C		34		
BIGB	17	2050	2102	2115	N31	W90	.998		11.1	25	1F	3	C	2102	100		
PALE	17	2254	2255	2303	S24	W18	.579		16.6	9	SF	2	C		26		
PALE	18	0154	0156	0200	N11	E18	.314		19.4	6	SF	3	C		25		
RAMY	18	1248	1249	1315	N09	W47	.726		15.0	27	SB	3	C		78		D
RAMY	18	1331	1334	1354	N10	E11	.197		19.4	23	SN	3	C		76		
RAMY	18	1420	1420	1429	S09	W03	.276		18.4	9	SN	3	C		46		
PALE	18	2010E	2010U	2016	N12	E09	.179		19.5	6D	SF	3	C		37		D
HOLL	18	2210	2218	2219	N22	E31	.553		21.2	9	SF	3	C		26		
PALE	19	0226E	0228	0233	S08	W13	.337		18.1	7D	SF	3	C		34		
MANI	19	0226	0228	0236	S08	W15	.359		18.0	10	SF	2	P		33	.3	
WEND	19	0643E		0700	S28	W53	.882		15.3	17D	SF		V		105	2.0	
WEND	19	0820E	0828	0904	S08	W16	.371		18.1	44D	SN		V		190	2.0	
RAMY	19	1450	1451	1508	S11	W57	.861		15.3	16	SF	3	C		30		
RAMY	19	1450	1451	1506	S30	W57	.913		15.3	16	SF	3	C		30		
WEND	19	1520E		1538D	N19	E20	.390		21.1	18D	1N		V		230	2.7	
RAMY	19	1524	1531	1547	N19	E18	.364		21.0	23	1N	3	C		261		
PALE	19	2227	2229	2243	N20	E16	.348		21.1	16	SF	3	C		68		D
BIGB	19	2229	2232	2347	N18	E17	.342		21.2	78	SN	3	C	2232	100	1.0	
ATHN	20	0742E	0745U	0800	N13	E46	.715		23.8	18D	SB	3	C		64		D
RAMY	20	1144	1145	1153	N14	E43	.680		23.7	9	SF	3	C		18		
HOLL	20	1942	1944	1949	N20	E03	.233		21.0	7	SF	3	C		45		
ISTA	21	0800		0805	N16	W38	.619		18.5	5	SN						D
ATHN	21	0950E	0955U	1037	N07	E66	.910		26.4	47D	SB	3	C		48		D
ATHN	21	1116E	1117U	1202	N09	E69	.929		26.6	46D	SB	3	C		80		D
RAMY	21	1305	1311	1323	N14	E26	.446		23.5	18	SF	3	C		99		

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM-POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	MIN.		CONG.	TYPE	TIME — UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
RAMY	21	1310	1314	1331	N12	E64	.893		26.3	21	1N	3	C		149		
HOLL	21	1335E	1350	1423	N19	W08	.249		21.8	480	SB	3	C		125		D
RAMY	21	1344	1353	1427	N18	W10	.255		20.8	43	SB	3	C		123		D
RAMY	21	1421	1427	1437	N13	E66	.907		26.5	16	SF	3	C		49		
RAMY	21	1647	1652	1702	N12	E62	.877		26.3	15	SN	3	C		79		
HOLL	21	1736	1743	1818	N09	E63	.885		26.5	42	SN	4	C		104		
PALE	21	1740	1744	1808	N14	E66	.907		26.7	28	SN	3	C		90		C
RAMY	21	1740	1740	1813	N14	E64	.892		26.5	33	SN	3	C		42		
RAMY	21	1843	1855	1914	N13	E61	.868		26.4	31	2B	3	C		356		
HOLL	21	1843	1849	1928	N13	E65	.900		26.7	45	2B	3	C		394		D
BIGB	21	1845	1849	1919	N10	E62	.877		26.4	34	SB	3	C	1849	80	1.8	
PALE	21	1845	1855	1914	N12	E62	.877		26.4	29	1B	2	C		248		
HOLL	21	1854	1902	19470	N20	W14	.324		20.7	530	2B	3	C		569		
BIGB	21	1855	1906	1941	N19	W11	.278		21.0	46	SB	3	C	1906	130	1.4	
PALE	21	1856	1904	1937	N19	W12	.289		20.9	41	2B	2	C		501		
RAMY	21	1859	1900	19200	N18	W10	.255		21.0	210	1B	3	C		373		
PALE	21	2002	2020	2037	N20	W08	.263		21.2	35	SF	3	C		86		C
MANI	21	2354E	2354U	0001C	N18	W17	.341		20.7	70	SN	1	V		80	.9	F
MANI	22	0025E	0026	0035D	N08	E60	.861		26.5	100	SF	1	V		20	.4	
MANI	22	0155E	0157U	0202D	N10	W70	.935		16.8	70	SF	1	V		23	.5	
MANI	22	0303E	0303U	0307D	N09	E61	.869		26.7	40	SF	1	V		30	.6	
ISTA	22	0610		0630	N09	E57	.833		26.5	20	SN						D
ATHN	22	0625E	0626U	0645	N08	E52	.783		26.2	200	SB	3	C		64		D
ISTA	22	0735		0758	N10	E56	.823		26.5	23	SF						D
ATHN	22	0832E	0833U	0845	N09	E51	.772		26.2	130	SB	3	C		127		D
HOLL	22	1414E	1418	15030	N18	W21	.395		21.0	490	1B	2	C		421		
BIGB	22	1417	1422	1517	N20	W20	.397		21.1	60	SB	1	C	1422	100	1.1	
RAMY	22	1417	1422	1503	N19	W20	.389		21.1	46	SB	3	C		176		
RAMY	22	1644	1654	1726	N14	E52	.783		26.6	42	SN	3	C		73		
RAMY	22	1647	1700	1717	N14	E11	.224		23.5	30	SF	3	C		121		
HOLL	22	1656	1656	1708	N16	E15	.297		23.8	12	SF	3	C		39		
PALE	22	1656	1714	1714	N14	E52	.783		26.6	18	SF	3	C		39		
BIGB	22	1700	1708	1730	N11	E52	.782		26.6	30	SN	2	C	1708	120	2.0	
BIGB	22	1712	1723	18150	N13	W70	.934		17.5	630	SB	2	P	1723	170		
RAMY	22	1712	1720	1817	N09	W68	.922		17.6	65	1N	3	C		124		
PALE	22	1714	1724	1728	N10	W74	.957		17.2	14	1N	3	C		123		D
HOLL	22	1717	1720	17210	N09	W76	.967		17.0	40	1N	3	C		138		
PALE	22	2122	2129	2201	N13	E50	.761		26.6	39	2B	3	C		417		D
BIGB	22	2124	2132	2209	N11	E49	.749		26.6	45	1B	3	C	2132	170	2.7	
BIGB	23	0000	0001	0040	N19	W27	.483		21.0	40	SB	3	C	0001	120	1.4	
PURP	23	0014	0018	0045	N19	W25	.456		21.1	31	1F		C				
ATHN	23	1052	1054	1111	N21	W36	.609		20.8	19	SB	3	C		95		D
RAMY	23	1120	1200	12020	N18	W33	.559		21.0	420	SB	3	C		196		
ATHN	23	1201	1203	1223	N21	W37	.621		20.7	22	SB	3	C		95		D
HOLL	23	1345	1407	1419	N15	W66	.907		18.6	34	SF	3	C		26		
RAMY	23	1450	1451	1501	N17	W38	.621		20.8	11	SN	3	C		54		
RAMY	23	1722	1725	1729	N16	W39	.632		20.8	7	SF	3	C		23		
BIGB	23	1817	1820	1917	N18	W37	.611		21.0	60	SB	2	C	1820	60	.8	
HOLL	23	2047	2049	2111	N16	W38	.619		21.0	24	SB	3	C		143		
HOLL	23	2119	2122	2126	N13	W71	.940		18.6	7	SF	3	C		26		
HOLL	23	2126	2129	22100	N16	W39	.632		21.0	440	1B	3	C		246		D
ISTA	24	0550E		06300	N20	W45	.713		20.9	400	1B						F
PURP	24	0558	0600	0603	N19	W44	.699		20.9	5	1F		C				E
ISTA	24	0830E		0915	N20	W45	.713		21.0	450	1B						F
RAMY	24	1606	1613	1718	N17	W52	.785		20.8	72	SB	3	C		150		D
HOLL	24	1615E	1703	1738	N16	W49	.752		21.0	830	1B	3	C		228		D
HOLL	24	1820	1822	1929	N13	W12	.229		23.9	69	SN	3	C		152		
BIGB	24	1822	1828	1904	N14	W14	.266		23.7	42	SB	3	C	1828	70	.7	
HOLL	24	1824	1824	18250	N16	W49	.752		21.1	10	SB	3	C		94		
HOLL	24	1824	1949	2020	N15	W54	.804		20.7	116	1B	3	C		196		
PALE	24	1842E	1908	19100	N16	W53	.794		20.8	280	1N	3	C		383		D
PALE	24	1947	1954	2017	N17	W54	.805		20.8	30	2F	3	C		346		D
PALE	24	2038	2038	2044	N17	W51	.774		21.0	6	SF	3	C		23		
PALE	24	2122	2123	2135	N16	W54	.804		20.8	13	SF	3	C		36		
PALE	24	2138	2141	2144	N19	W52	.787		21.0	6	SF	3	C		34		
PALE	24	2153	2154	2201	S14	E44	.748		28.2	8	SF	3	C		27		
PALE	24	2154	2159	2201	N16	W53	.794		20.9	7	SF	3	C		21		
PALE	24	2206	2210	2221	N16	W55	.814		20.8	15	SE	3	C		156		
BIGB	24	2207	2211	2309	N19	W57	.835		20.6	62	SB	1	C	2211	100	1.9	

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM-POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
PALE	25	0057	0057	0103	N16	W57	.833		20.8	6	SN	3	C		32		
PALE	25	0131	0131	0154	N16	W56	.824		20.9	23	SN	3	C		55		
ATHN	25	1022E	1024U	1037	N06	E12	.207		26.3	15D	SB	3	C		64		D
ATHN	25	1037E	1038U	1038D	N18	W59	.852		21.0	1D	SN	3	C		64		D
RAMY	25	1229	1303	13340	N18	W62	.877		20.9	65D	SB	3	C		118		
RAMY	25	1254	1255	1303	N07	E13	.223		26.5	9	SN	3	C		65		
ATHN	25	1257E	1259U	13000	N06	E11	.190		26.4	3D	SN	3	C		80		C
ATHN	25	1308E	1309	1400D	N20	W56	.826		21.3	52D	SB	3	C		143		
BIGB	25	1459	1501	1507	N17	W64	.892		20.8	8	1N	2	C	1501	100	2.4	
RAMY	25	1746	1746	1750	N06	E11	.190		26.6	4	SF	3	C		72		
HOLL	25	1852	2008	2028	N15	W65	.900		20.9	96	1B	3	C		285		
BIGB	25	2006	2008	2017	N18	W65	.900		21.0	11	1B	3	C	2008	160		
HOLL	25	2058	2101	2111	N15	W68	.920		20.8	13	SF	3	C		55		
HOLL	25	2121	2123	2132	N16	W65	.899		21.0	11	SF	3	C		21		
HOLL	25	2135	2155	2214	N16	W66	.907		20.9	39	SN	3	C		83		
PURP	26	0250	0251	0256	N16	W90	.999		19.4	6	SN		C				D
PURP	26	0355	0356	0402	S07	W16	.363		25.0	7	1B		C				
PURP	26	0622	0626	0653	S27	E3E	.752		29.0	31	SN		C				D
PUPP	26	0816	0818		N19	W72	.944		20.9								
PURP	26	0816	0828	0838	N19	W72	.944		20.9	22	1B		C				EK
PURP	26	0850	0852	0913	S07	W19	.400		24.9	23	SN		C				E
RAMY	26	1255	1317	1348	S09	W20	.432		25.0	53	SN	3	C		132		
RAMY	26	1345	1408	1422	N20	W71	.938		21.2	37	1B	3	C				D
HOLL	26	2008	2018	2026	S25	E29	.678		29.0	18	SF	2	C		53		
HOLL	26	2029	2029	2124	S25	E30	.687		29.1	55	SF	2	C		56		
PURP	26	2301	2301	2305	S28	E30	.713		29.2	4	SB		C				E
PUPP	27	0208	0213	0231	S19	E13	.486		28.1	23	SN		C				E
ISTA	27	0703		0712	S05	E90	1.000		3.0	9	SB						A
ISTA	27	0717		0722	N19	W90	.999		20.6	5	SB						AD
PURP	27	0752	0758	0830	N15	W47	.728		23.8	38	1F		C				G
RAMY	27	1139	1140	1144	N17	W81	.983		21.4	5	SN	3	C				
GEOR	27	1151E		1157	S09	E90	1.000		3.2	6D	SF	1					
ATHN	27	1332E	1334	1354	S07	E86	.999		3.0	22D	SB	2	C		32		D
HOLL	27	1707	1726U	1827	S09	W37	.646		24.9	80	SN	3	C		165		
RAMY	27	1711	1729	1749	S10	W3E	.639		25.0	38	SF	3	C		181		
BIGB	27	1721	1727	1834	S09	W37	.646		24.9	73	SN	3	C	1727	90	1.2	
HOLL	27	1758	1939	00010	N14	E78	.973		2.6	363D	1F	3	C				
HOLL	27	1758	1758	1843	N13	E78	.973		2.6	45	SF	3	C				
PALE	27	2202E	2225U	2240D	N16	E75	.960		2.5	38D	SF	2	C		43		
PURP	27	2355	0004	0025	S07	W28	.519		25.9	30	1F		C				
PALE	28	0137E	0200U	0259D	N15	E75	.960		2.7	82D	SF	3	C		62		
RAMY	28	1158	1158	1203	S06	E66	.921		2.4	5	SN	3	C		31		
RAMY	28	1245	1247	1249	N13	E71	.939		2.9	4	1F	3	C		124		
HOLL	28	1331	1613	1620	N02	E73	.956		3.0	169	1F	3	C				
HOLL	28	1418	1420	1432	N11	W01	.070		28.5	14	SF	3	C		38		
HOLL	28	1450	1451	1456	S07	E66	.923		2.6	6	SF	3	C		15		
HOLL	28	1548	1550	1551	S06	E66	.921		2.6	3	SF	3	C		12		
PALE	28	2012E	2013	20280	S25	E03	.534		29.1	16D	SF	3	C		39		
PALE	28	2315E	2315U	2330	N01	E7E	.970		3.7	15D	SF	3	C				
PALE	29	0113	0116U	0135	N14	E63	.884		2.8	22	SF	3	C		16		
PALE	29	0329	0336U	0345D	S03	E63	.896		2.9	16D	SF	3	C		24		
BUCA	29	0615		0700	S04	E62	.890		2.9	45	SF		P	0625	6	2.0	E
ISTA	29	0621E		0634	S05	E65	.913		3.1	13D	SN						E
ATHN	29	1220E	1223	1240	N12	E61	.868		3.1	20D	SB	3	C		64		
HOLL	29	1705	1705	1709	S27	W07	.571		29.2	4	SN	3	C		24		
HOLL	29	1708	1711	1721	S08	E53	.819		2.7	13	SN	3	C		40		
HOLL	29	1759	1810	1825	N11	E53	.792		2.7	26	SN	3	C		37		
PALE	29	1801	1803	1805	N14	E53	.793		2.7	4	SF	3	C		28		
HOLL	29	1914	1926	1932	N23	E03	.278		30.0	18	SF	3	C		48		
PALE	29	2006	2008	2012	S07	E53	.816		2.8	6	SF	3	C		37		
PALE	29	2022	2025	2030	N13	E58	.841		3.2	8	SF	3	C		20		
PALE	29	2126	2132	2142	N14	E51	.772		2.7	16	SF	3	C		28		
PALE	29	2223	2223	2236D	N16	E54	.804		3.0	13D	SF	3	C		28		
PALE	29	2349	2350	0006D	N15	E52	.783		2.9	17D	SF	2	C		57		
PURP	30	0448	0450	0500	S03	E62	.889		3.9	12	SN		C				D
PURP	30	0448	0454	0603	N11	E51	.771		3.0	75	1B		C				W
MANI	30	0536E	0537U	0540D	S05	E47	.748		2.8	4D	SN	1	V		15	.2	F

Hα SOLAR FLARES

AUGUST 1980

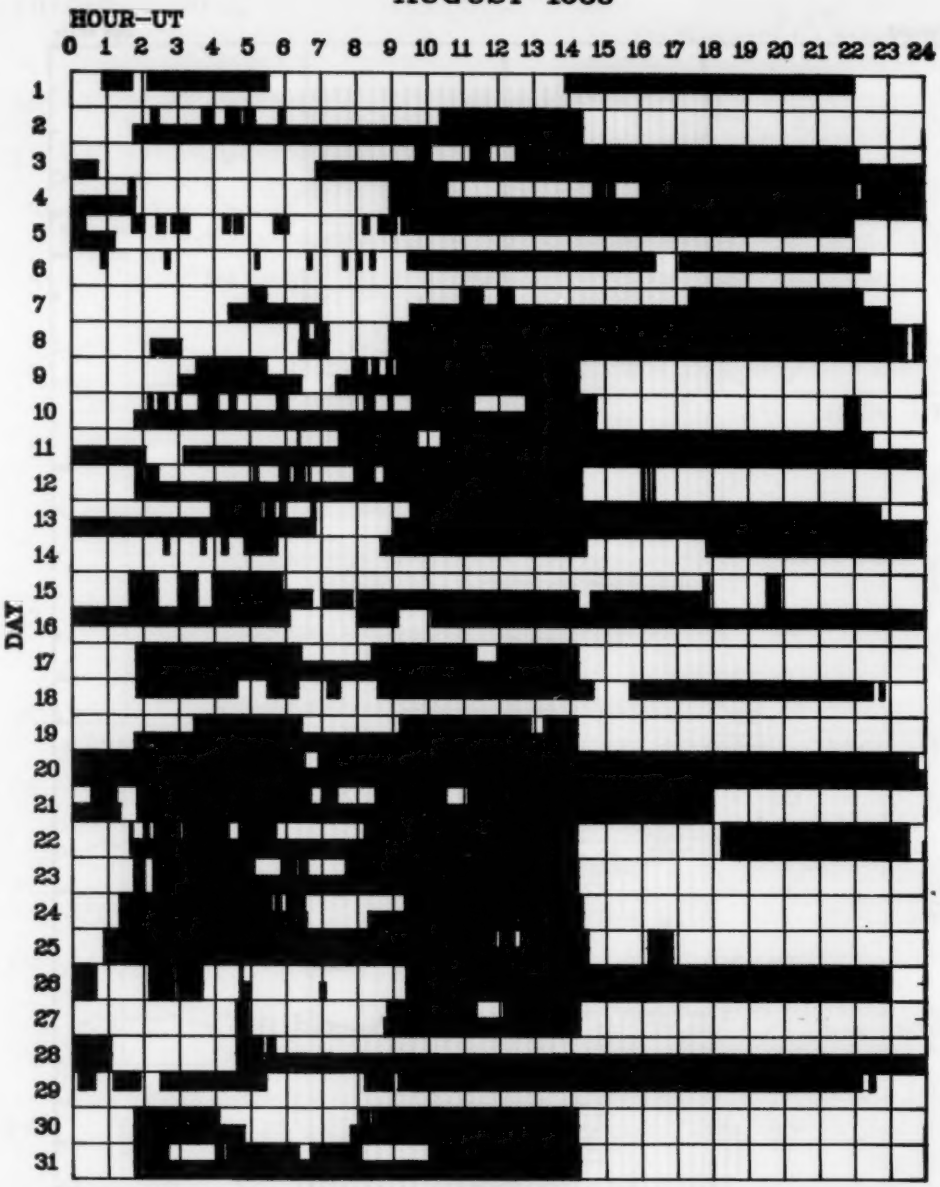
OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mil. of Disk	CORR. AREA Sq. Deg.	
BUCA	30	0600E		0700	N10	E47	.726		2.8	600	SN		P	0610	54	.8	O
PURP	30	0607	0614		N10	E49	.749		2.9								
PURP	30	0607	0637	0648	N10	E49	.749		2.9	41	1B		C				K
MANI	30	0616E	0617	0623D	N11	E48	.737		2.9	70	SN	1	V		20	.3	
BUCA	30	0625		0650	N10	E52	.782		3.2	25	SN		P	0630	86	1.5	
MANI	30	0626E	0626U	0632D	N11	E53	.792		3.2	60	SN	2	P		50	.8	F
ATHN	30	0805E	0807	0823	N12	E44	.690		2.6	180	SB	3	C		48		O
ATHN	30	1242E	1250	1314	N11	E39	.625		2.5	320	SB	3	C		80		O
RAMY	30	1243E	1245	1330	N11	E43	.677		2.8	470	1B	3	C		189		O
RAMY	30	1353	1358	1409	N11	E42	.664		2.7	16	SN	3	C		21		
HOLL	30	1456	1458	1505	N23	W08	.303		30.0	9	SF	3	C		24		
HOLL	30	1637	1639	1641	N23	W09	.318		30.0	4	SF	3	C		24		
PALE	30	1853E	1905U	1917D	N12	E39	.626		2.7	240	SF	3	C		33		
PALE	30	1908	1908	1912	S07	E40	.673		2.8	4	SF	3	C		18		
BIGB	30	1923	1924	1957	S26	W24	.650		29.0	34	SN	3	C	1924	60	.7	
PALE	30	2026	2026	2032	N22	W12	.323		30.0	6	SF	3	C		31		
PALE	30	2349	2350	0006D	N15	E52	.783		3.9	17D	SF	2	C		57		
PALE	31	0013	0014	0034	N12	E38	.612		2.9	21	SF	3	C		75		
ATHN	31	0328	1338	1335D	S08	E40	.678		3.1	607D	1B	3	C		286		
ISTA	31	0830		0904	S06	E46	.740		3.8	34	1B						E
ISTA	31	0835		0847	N13	E32	.530		2.8	12	SN						E
ATHN	31	0924E	0926	0935	N11	E31	.513		2.7	11D	SB	3	C		64		D
ATHN	31	1248	1251	1255D	N12	E29	.485		2.7	7D	SB	3	C		143		
RAMY	31	1249	1249	1256	N12	E28	.470		2.6	7	SB	3	C		189		
RAMY	31	1258	1307	1311	S09	E31	.572		2.9	13	SF	3	C		47		
RAMY	31	1325	1353	1443	S05	E41	.678		3.6	78	2B	3	C		803		O
ATHN	31	1328	1330	1400D	S08	E40	.678		3.6	32D	1B	3	C		286		
BIGB	31	1415E	1417U	1718D	S07	E40	.674		3.6	183D	1N	1	P	1417	298	3.9	
HOLL	31	1515	1519	1524	S04	E38	.637		3.5	9	SF	3	C		23		
HOLL	31	1640	1647	1656	N13	E29	.487		2.9	16	SF	3	C		59		
PALE	31	2022	2024	2039	N12	E31	.514		3.2	17	SF	3	C		79		

A = Eruptive prominence whose base is less than 90 degrees from central meridian.
B = Probably the end of a more important flare.
C = Invisible 10 minutes before.
D = Brilliant point.
E = Two or more brilliant points.
F = Several eruptive centers.
G = No visible spots in the neighborhood.
H = Flare accompanied by high-speed dark filament.
I = Active region very extended.
J = Distinct variations of plage intensity before or after the flare.
K = Several intensity maxima.
L = Existing filaments show signs of sudden activity.
M = White-light flare.
N = Continuous spectrum shows effects of polarization.
O = Observations have been made in the H and K lines of CaII.
P = Flare shows helium D3 in emission.
Q = Flare shows Balmer continuum in emission.
R = Marked asymmetry in H-alpha line suggests ejection of high-velocity material.
S = Brightness follows disappearance of filament in same position.
T = Region active all day.
U = Two bright branches, parallel or converging.
V = Occurrence of an explosive phase: important, expansion within roughly 1 minute that often includes a significant intensity increase.
W = Great increase in area after time of maximum intensity.
X = Unusually wide H-alpha line.
Y = System of loop-type prominences.
Z = Major sunspot umbra covered by flare.

INTERVALS OF NO FLARE PATROL OBSERVATION

FOR PRECEDING SOLAR FLARE TABLE

AUGUST 1980



Observatories included in total patrol:

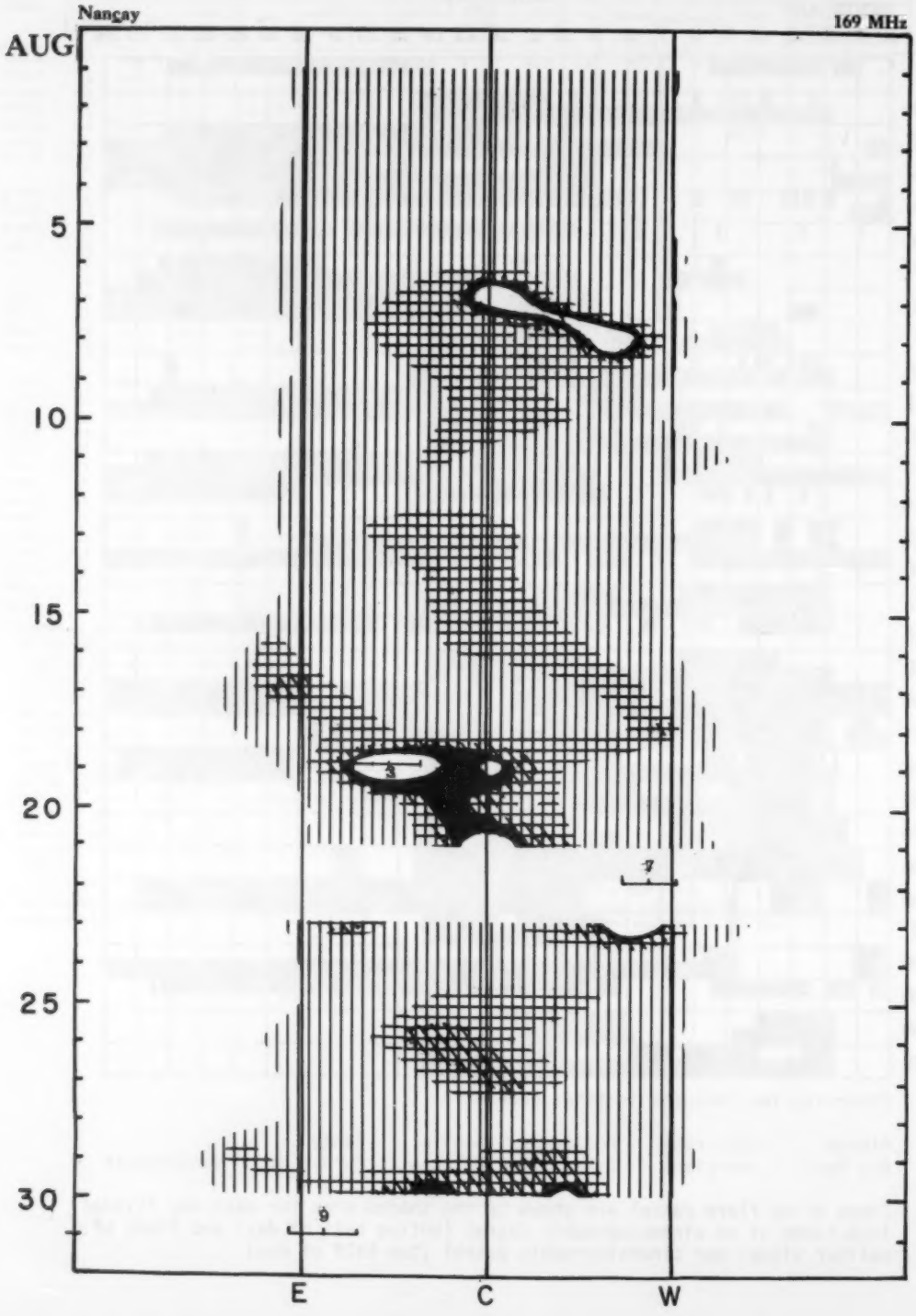
Athens	Bucharest	Holloman	Manila	Ramey	
Big Bear	Georgiana	Istanbul	Palehua	Purple Mt	Wendelstein

Times of no flare patrol are shown by the shaded area for each day divided into times of no cinematographic patrol (bottom half of day) and times of neither visual nor cinematographic patrol (top half of day).

22
Aug 80

SOLAR RADIO EMISSION
INTERFEROMETRIC OBSERVATION

AUGUST 1980

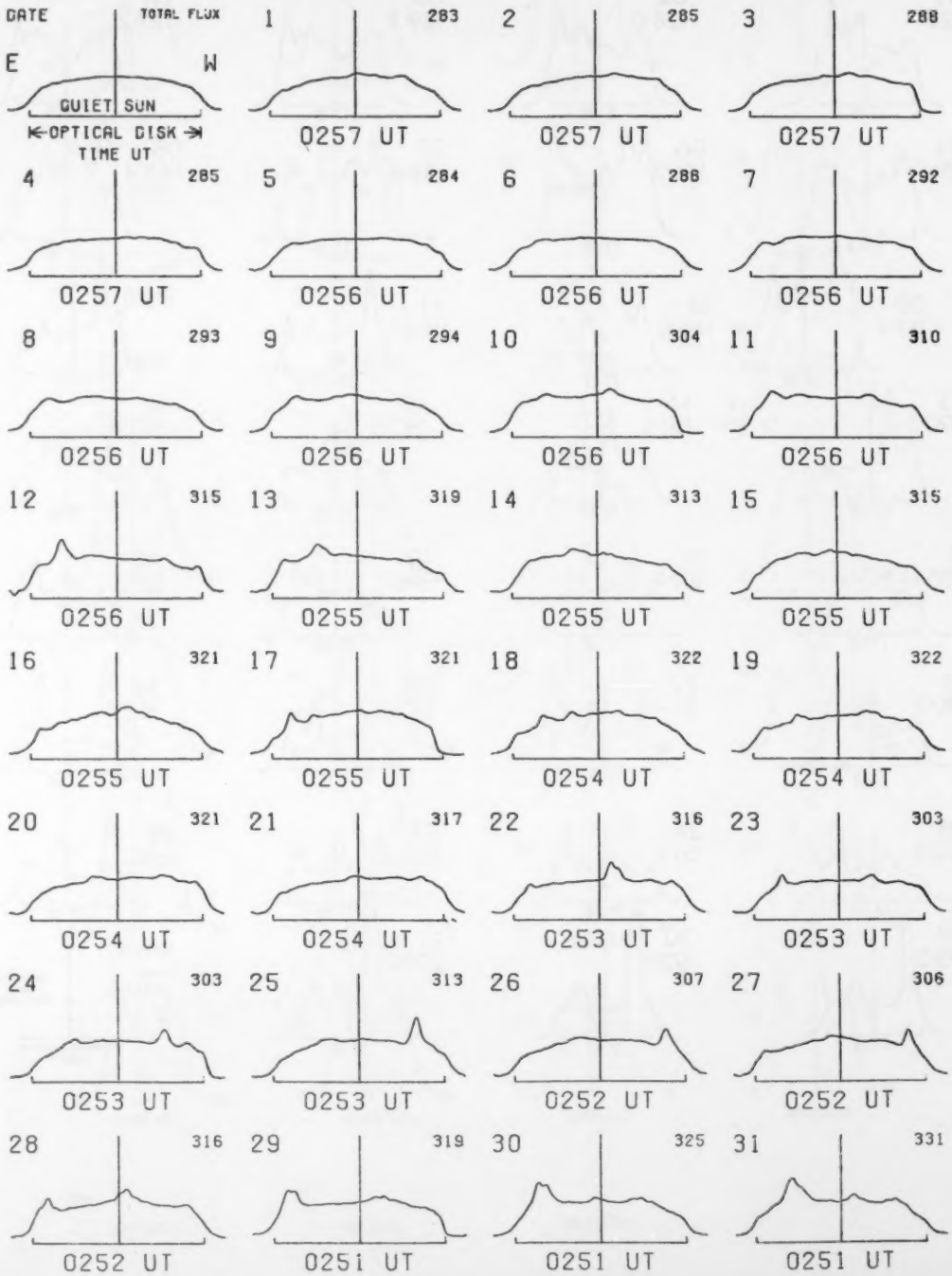


EAST-WEST SOLAR SCANS

AUGUST 1980

TOYOKAWA, JAPAN

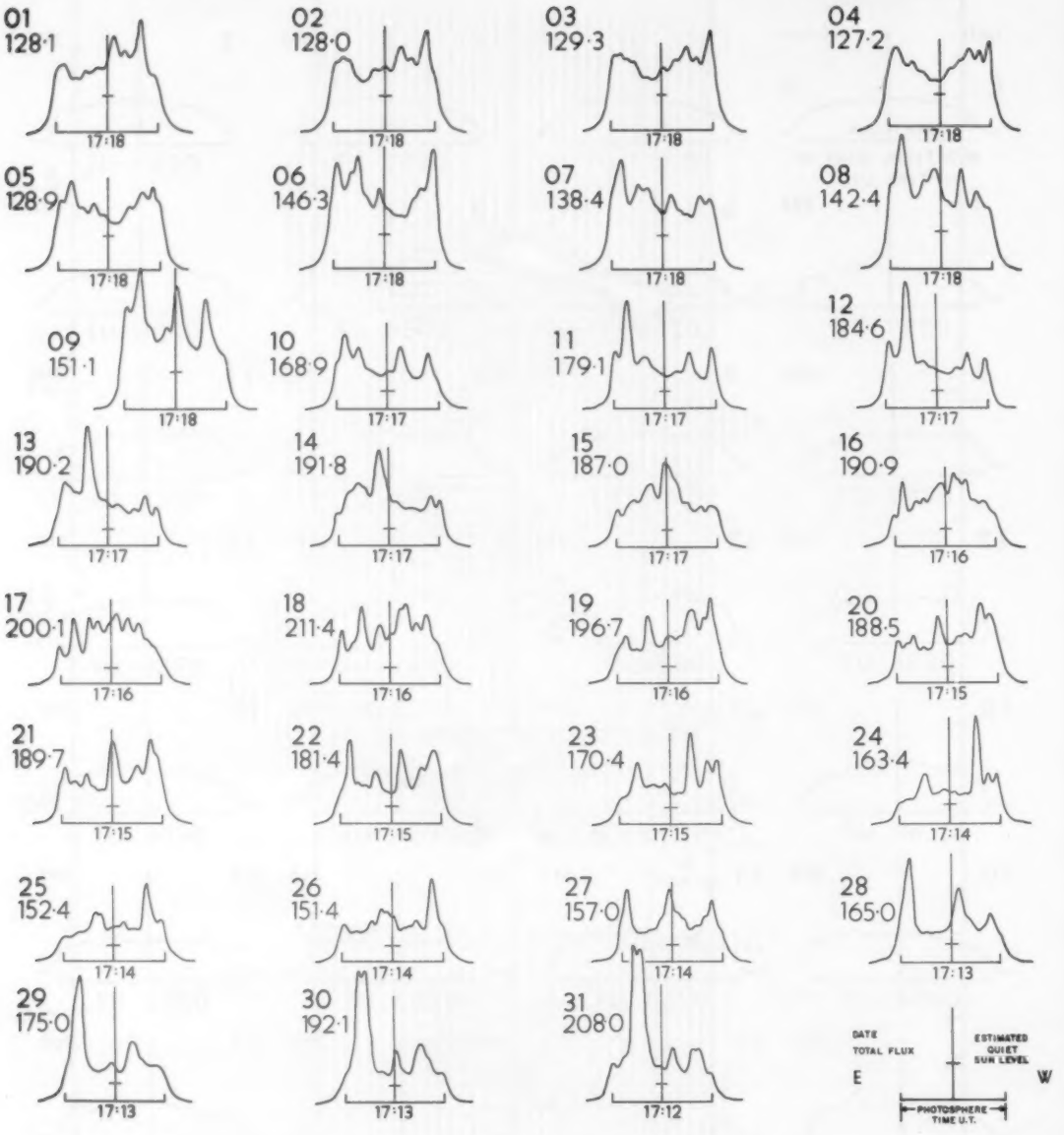
3 CM
FAN BEAM WITH 1.1 MINUTES OF ARC



EAST-WEST SOLAR SCANS
AUGUST 1980

ALGONQUIN RADIO OBSERVATORY
CANADA

10·7 cm
Fan Beam with 1·5 minutes of arc
E-W Resolution

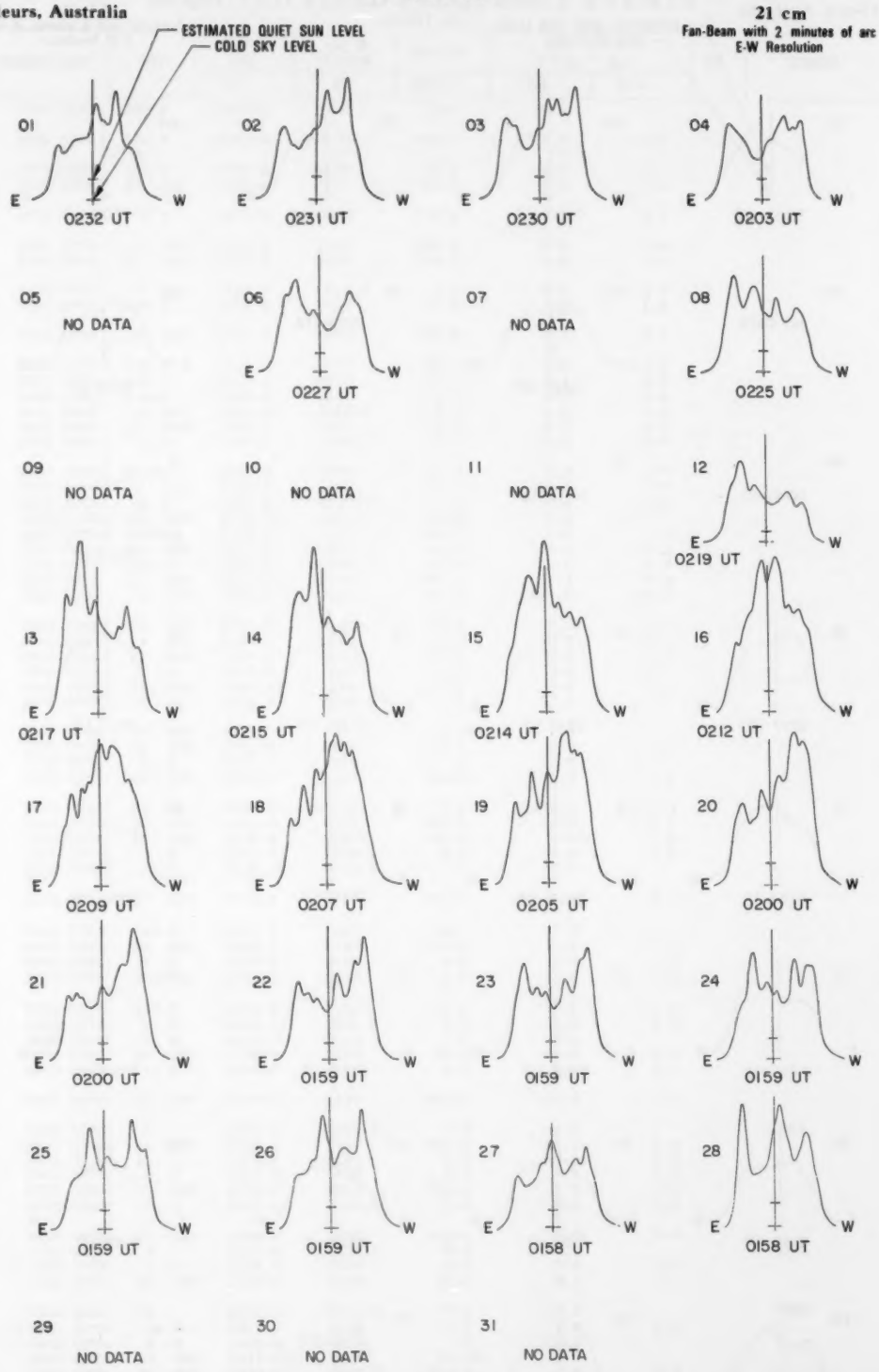


EAST-WEST SOLAR SCANS

AUGUST 1980

Fleurs, Australia

21 cm
Fan-Beam with 2 minutes of arc
E-W Resolution

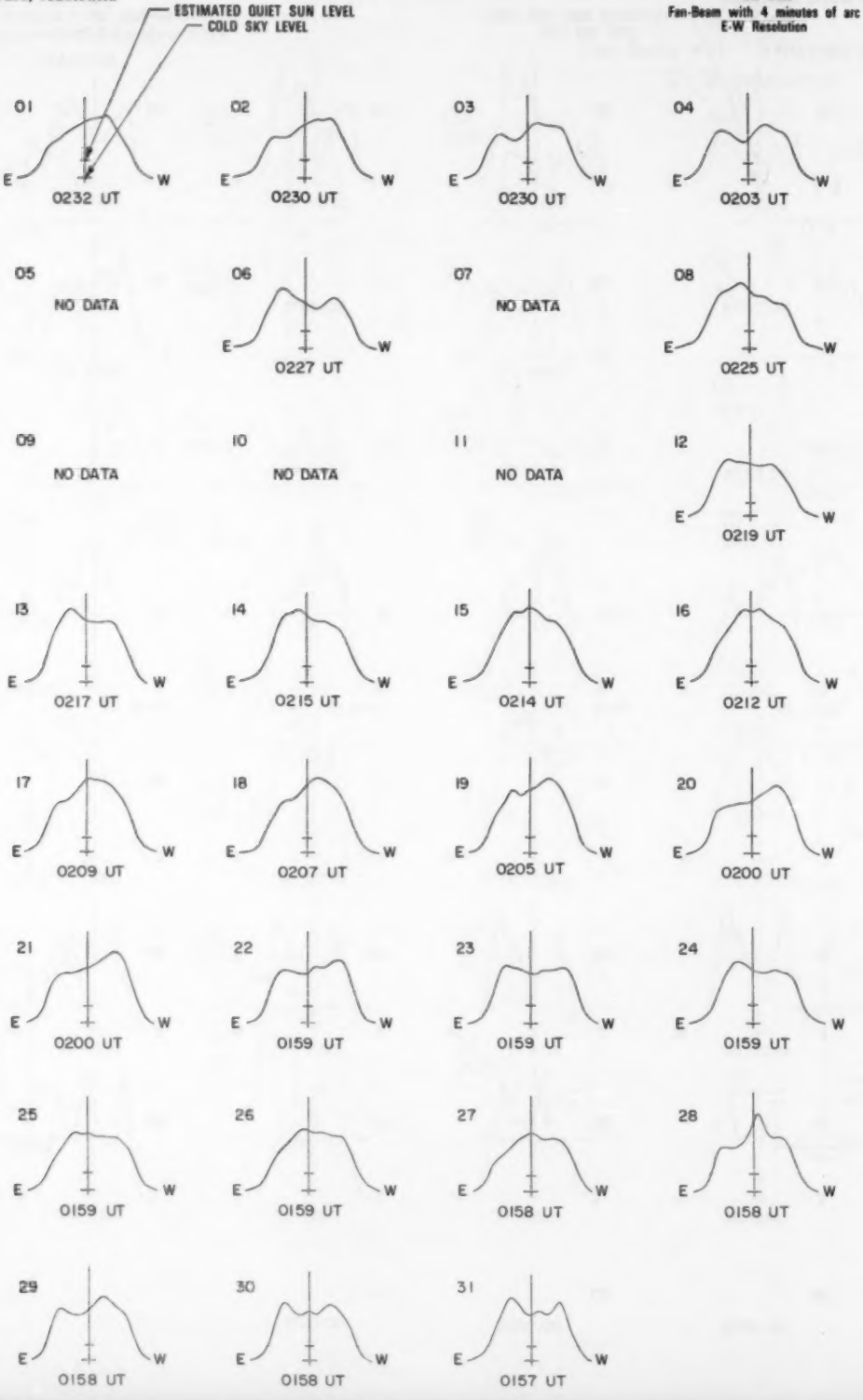


EAST-WEST SOLAR SCANS

AUGUST 1980

Fleurs, Australia

43 cm
Fan-Beam with 4 minutes of arc
E-W Resolution



DAY OF MONTH
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SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

AUGUST 1980

DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	REMARKS
				UT	UT	MINUTES	PEAK	MEAN		
01	2800	OTTA	240 R	2040.0	2055	15.0	2.2	1.1		
02	2695	PENT	240 R	2150.0	2330	100.0	2.6	1.3		
03	2695	PENT	240 R	0040.0	0120	40.0	4.0	2.0		
	2800	OTTA	20 GRF	1220.0	1236	60.0	2.0	1.0		
05	2800	OTTA	50 R	1850.0	2040	110.0	6.8	3.4		
06	2800	OTTA	6 GRF	1510.0	1710	390.0	9.2	4.6		
	2800	OTTA	20 GRF	2150.0	2255	195.0	6.8	3.4		
07	2800	OTTA	2 S/F	1122.5	1124.1	3.5	6.0	2.5		
	2800	OTTA	240 R	1955.0	2005	10.0	2.0	1.0		
08	2800	OTTA	20 GRF	1910.0	2300	350.0	7.4	3.7		
09	2800	OTTA	240 R	1435.0	1600	85.0	2.6	1.3		
	2800	OTTA	240 R	1720.0	1830	70.0	3.2	1.6		
	2695	PENT	240AR	2005.0	2240	155.0	6.4	3.2		
	2695	PENT	2 S/F	2014.8	2016.5	2.5	4.8	3.6		
	2695	PENT	21 GRF	2325.0	2355	110.0	6.4	3.2		
	2695	PENT	3 S	2349.0	2349.2	1.0	82.0	16.6		
10	2800	OTTA	240AR	1230.0	1245	15.0	3.2	1.6		
	2800	OTTA	4 S/F	1236.5	1238	3.0	10.4	5.2		
	2800	OTTA	8 S	1247.2	1247.5	.8	2.6	1.8		
	2800	OTTA	20 GRF	1418.0E	1420	40.0D	2.6			
	2800	OTTA	240 R	1555.0	1655	60.0	2.0	1.0		
	2800	OTTA	20 GRF	1803.0	1807	95.0	4.6	2.3		
	2800	OTTA	240 R	1945.0	2000	15.0	2.0	1.0		
	2800	OTTA	21 GRF	2045.0	2135	145.0	11.2	6.8		
	2800	OTTA	4 S/F	2059.5	2104	15.0	485.0	116.0		
11	2695	PENT	21 GRF	0040.0	0120	80.0	5.6	2.8		
	2695	PENT	4 S/F	0058.0	0104	11.0	51.0	19.4		
	2800	OTTA	21 GRF	1230.0	1250	90.0	4.8	2.8		
	2800	OTTA	1 S	1248.5	1249	2.0	3.8	1.3		
	2800	OTTA	21 GRF	1910.0	1920	20.0	3.6	1.6		
	2800	OTTA	1 S	1918.5	1918.7	1.0	3.2	1.6		
12	2800	OTTA	20 GRF	1415.0E		40.0D	2.8			
	2800	OTTA	21 GRF	1710.0	1800	75.0	2.6	1.3		
	2800	OTTA	8 S	1719.0	1719.1	.2	3.6			
	2800	OTTA	20 GRF	1830.0	1940	130.0	3.2	1.6		
13	2800	OTTA	47 GB	1247.6	1255.5	23.4	1100.0	303.0		
	2800	OTTA	30 PBI	1311.0	1311	360.0	32.0	8.1		
	2800	OTTA	21 GRF	1318.0	1325	40.0	5.6	2.8		
	2800	OTTA	1 S	1318.5	1320.2	4.0	8.8	4.4		
	2800	OTTA	8 S	2118.3	2118.5	.3	7.0			
14	2800	OTTA	20 GRF	1500.0	1710	290.0	6.4	3.2		
15	2800	OTTA	240 R	1125.0	1145	20.0	7.2			
	2800	OTTA	20 GRF	1545.0	1547	35.0	3.6	1.2		
	2800	OTTA	1 S	2144.5	2146	4.5	3.0	1.5		
	2800	OTTA	260 FAL	2150.0	2200	10.0	-3.6	-1.8		
16	2800	OTTA	240 R	1214.0	1240	26.0	3.6	1.8		
	2800	OTTA	1 S	1804.0	1806	5.0	4.0	2.0		
	2800	OTTA	1 S	1930.0	1934	7.0	3.4			
	2800	OTTA	21 GRF	2115.0	2155	95.0	3.4	2.6		
	2800	OTTA	1 S	2152.0	2153	2.0	2.2	1.1		
17	2800	OTTA	22 GRF	1320.0	1420	605.0	14.4	7.2		
18	3200	BERN	1	1045.0	1045.5	3.0	4.0			OPR
	2800	OTTA	21 GRF	1245.0	1657	365.0	12.0	6.0		
	2800	OTTA	45 C	1248.0	1249	4.0	9.2	3.6		
	2800	OTTA	1 S	1419.0	1420	2.0	3.6	1.2		
	2800	OTTA	21 GRF	1900.0	1914	150.0	7.8	3.6		
	2695	PENT	1 S	2007.0	2007.3	1.0	8.6	2.9		
19	2800	OTTA	21 GRF	1300.0	1432	210.0	8.2	3.0		
	3200	BERN	3	1523.0	1525.0	8.0	12.0			OPR
	2800	OTTA	1 S	1524.0	1525	2.5	9.0	3.0		
	2800	OTTA	20 GRF	2225.0	2235	60.0	4.2	2.1		
20	3200	BERN	22	0738.0	0740.6	17.0	18.0			OPR
	2800	OTTA	1A S	1317.0	1318	2.5	2.4	1.2		
	2800	OTTA	8 S	1318.0	1318	.1	12.2			
	2800	OTTA	20 GRF	1417.0E	1419	38.0D	3.2			
	2800	OTTA	20 GRF	1830.0	1950	210.0	4.0	2.0		

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

AUGUST 1980

DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	REMARKS
				UT	UT	MINUTES	PEAK	MEAN		
21	3200	BERN	45	1303.1	1344.3	76.0	26.0			OPR
	2800	OTTA	21 GRF	1305.0	1350	200.0	11.6	5.0		
	2800	OTTA	8 S	1312.7	1312.7	.1	7.0			
	2800	OTTA	3 S	1343.0	1344	2.5	12.4	6.2		
	2800	OTTA	22 GRF	1700.0	1755	80.0	4.2	2.0		
	2800	OTTA	23 GRF	1850.0	2030	160.0	9.2	4.6		
	2800	OTTA	4 S/F	1855.0	1857.7	7.0	78.0	35.0		
	2800	OTTA	30 PBI	1902.0	1902	16.0	12.4	6.0		
	2800	OTTA	45 C	1905.0	1905.5	3.0	6.2	3.0		
	2800	OTTA	1 S	1912.0	1912.5	2.5	6.2	2.0		
	2695	PENT	2 S/P	2348.0	2349	2.0	9.6	2.6		
22	2800	OTTA	4 S/F	1249.2	1249.4	1.0	22.0			
	2800	OTTA	21 GRF	1350.0	1450	110.0	6.6			
	2800	OTTA	1 S	1417.5	1420	8.0	4.2	2.0		
	2800	OTTA	21 GRF	1630.0	1745	250.0	15.4	7.7		
	2800	OTTA	1 S	1651.0	1655	9.0	78	3.9		
	2800	OTTA		1713.0	1721	12.0	9.0			
	2800	OTTA	1 S	1906.5	1907	3.0	4.2	2.0		
	2800	OTTA	46F C	2123.5	2125.7	8.5	157.0	35.0		
	2800	OTTA	29 PBI	2132.0	2132	20.0	9.2	3.0		
23	2695	PENT	21 GRF	0000.0	0035	90.0	3.2	2.6		
	2695	PENT	1 S	0000.5	0001.5	2.5	4.8	2.4		
	2800	OTTA	20 GRF	1140.0	1203	65.0	4.6	2.3		
	2800	OTTA	24O R	1430.0	1450	20.0	2.0	1.0		
	2800	OTTA	20 GRF	1720.0	1740	45.0	2.6	1.3		
	2800	OTTA	1 S	1816.0	1818	4.0	8.0	4.0		
	2800	OTTA	29 PBI	1820.0	1820	35.0	3.2	2.0		
	2800	OTTA	21 GRF	2125.0	2132	50.0	7.8	4.0		
	2800	OTTA	4 S/F	2127.0	2128.7	5.0	29.0	10.0		
	2695	PENT	26O FAL	2230.0	2300	30.0	-6.2	-3.1		
24	2800	OTTA	27A RF	1210.0		360.0	7.6	6.6		
	2800	OTTA	24 R	1210.0	1300	50.0	7.6	4.0		
	2800	OTTA	24P R	1300.0		270.0	7.6			
	2800	OTTA	20 GRF	1640.0	1645	40.0	4.6	2.3		
	2800	OTTA	26 FAL	1730.0	1800	40.0	-7.6	-3.8		
	2800	OTTA	22 GRF	1820.0	1920	320.0	15.0	7.0		
25	3200	BERN	22	1011.0	1019.5	111.0U	12.0			
	3200	BERN	22	1245.0U	1305.5	197.0U	6.0			
	2800	OTTA	21 GRF	1250.0	1415	280.0	11.4	5.7		
	2800	OTTA	1 S	1253.8	1254	2.0	2.6	1.3		
	2800	OTTA	1 S	1304.0	1304.7	3.0	3.6	1.8		
	2800	OTTA	2 S/F	1855.0	1855.8	5.0	8.6	2.2		
	2800	OTTA	240AR	2000.0	2015	15.0	2.6	1.3		
	2695	PENT	3 S	2006.9	2007.1	1.5	12.2	3.6		
	2800	OTTA	20 GRF	2100.0	2155	210.0	7.8	3.9		
26	2695	PENT	8 S	0058.0	0058.1	5.0	8.0	2.9		
	2800	OTTA	20 GRF	1225.0	1300	90.0	3.8	1.9		
	2800	OTTA	20 GRF	1356.0	1450	175.0	4.6	2.3		
	2800	OTTA	20 GRF	1845.0	1846	11.0	3.0	1.4		
	2695	PENT	1 S	2257.0	2258	1.3	2.2	1.0		
	2695	PENT	20 GRF	2350.0	2400	60.0	2.6	1.3		
27	8400	BERN	20	1235.5	1237.1	12.0	18.0			OPR
	2800	OTTA	22 GRF	1315.0	1328	95.0	5.2	2.6		
	2800	OTTA	20 GRF	1710.0	1746	95.0	6.2	3.1		
	2800	OTTA	1 S	2019.0	2020	3.0	8.4	3.0		
	2695	PENT	20 GRF	2240.0	2440	150.0	5.8	2.9		
28	2800	OTTA	1 S	1157.5	1158.2	1.5	5.8	1.9		
	2800	OTTA	24O R	1216.0	1230	14.0	2.6			
	2800	OTTA	24O R	1615.0	1630	15.0	2.6	1.6		
	2800	OTTA	21 GRF	1710.0	1755	140.0	2.6	1.6		
	2800	OTTA	1 S	1726.0	1726.7	2.0	6.4	3.2		
	2800	OTTA	20 GRF	2005.0	2010	25.0	2.6	1.8		
	2800	OTTA	24O R	2050.0	2115	25.0	3.4	1.7		
	2695	PENT	20 GRF	2225.0	2320	150.0	6.4	3.6		
29	3200	BERN	22	0609.3	0615.8	30.0	4.0			OPR
	2800	OTTA	21 GRF	1150.0	1225	70.0	3.2	1.8		
	8400	BERN	21	1219.1	1221.0	17.0	15.0			OPR
	3200	BERN	21	1219.6	1221.5	18.0	5.0			OPR
	2800	OTTA	1 S	1220.0	1221	2.5	4.8	2.6		
	2800	OTTA	2 S/F	1238.0	1239	2.0	3.2	1.6		
	2800	OTTA	20 GRF	1515.0	1630	135.0	2.6	1.4		
	2695	PENT	1 S	1707.0	1707.8	2.0	2.4	1.0		
	2800	OTTA	21 GRF	1750.0	1810	80.0	2.6	1.3		
	2800	OTTA	1 S	1804.0	1804.5	3.0	2.6	1.3		
	2800	OTTA	20 GRF	2100.0	2355	240.0D	6.6			
30	8400	BERN	1	0623.5	0625.0	6.0	13.0			OPR

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

AUGUST 1980

DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	REMARKS
				UT	UT	MINUTES	PEAK	MEAN		
30	3200	BERN	1	0623.5	0625.0	5.0	5.0			OPR
	2800	OTTA	23 GRF	1145.0	1420	395.0	11.8	5.8		
	3200	BERN	1	1240.5	1243.2	15.0	5.0			OPR
	2800	OTTA	1 S	1242.0	1243.5	3.0	5.4	1.8		
	2800	OTTA	24OAR	1840.0	1925	45.0	7.8	3.9		
	2800	OTTA	8 S	1922.7	1922.9	.7	5.0	2.5		
	2695	PENT	3 S	2001.0	2001.9	1.5	11.8	2.8		
	2800	OTTA	240 R	2025.0	2100	35.0	6.8	3.4		
31	3200	BERN	45	0817.0	0841.3	58.0	13.0			OPR
	3200	BERN	45	0923.0	0924.0U	17.0	98.0D			OPR
	3200	BERN	1	0958.3	0959.8	13.0	5.0			OPR
	2800	OTTA	23 GRF	1130.0	1336	440.0	43.0	18.4		
	3200	BERN	1	1137.7	1139.6	6.0	5.0			OPR
	3200	BERN	1	1226.6	1227.7	6.0	4.0			OPR
	2800	OTTA	2 S/F	1227.0	1228	3.5	6.0			
	3200	BERN	47	1246.7	1249.0U	15.0	96.0D			OPR
	2800	OTTA	47 GB	1248.0	1249	11.0	562.0	68.0		
	2800	OTTA	1 S	1302.0	1303.5	3.0	4.0	1.4		
	3200	BERN	1	1302.1	1303.6	6.0	6.0			OPR
	3200	BERN	23	1310.6	1330.1	188.0	57.0			OPR
	2800	OTTA	4 S/F	1325.0	1330	10.0	48.0	15.3		
	2800	OTTA	8 S	1719.1	1719.1	.1	2.0			
	2800	OTTA	8 S	1749.0	1749.1	.6	11.2	5.0		
	2800	OTTA	8 S	1836.5	1836.7	.5	1.6	.8		
	2800	OTTA	1 S	1841.0	1841.2	1.0	2.0	1.0		
	2800	OTTA	1 S	1910.0	1910.2	3.0	2.0	1.0		
	2800	OTTA	21 GRF	1945.0	1953	20.0	6.0	3.0		
	2800	OTTA	1 S	1947.0	1948	4.0	3.2	1.6		
	2695	PENT	3 S	2302.5	2303	1.5	15.0	7.0		

Observatories:

BERN = Berne BOUL = Boulder MANI = Manila OTTA = Ottawa ARO PENT = Penticton SGMR = Sagamore Hill

Explanation of Type Code:

1 Simple 1	6 Minor	22 Simple 3F	27 Rise and Fall	32 Absorption	44 Noise Storm in Progress	
2 Simple 1F	7 Minor +	23 Simple 3AF	28 Precursor	40 Fluctuation	45 Complex	
3 Simple 2	8 Spike	24 Rise	29 Post Burst Increase	41 Group of Bursts	46 Complex F	
4 Simple 2F	20 Simple 3	25 Rise A	30 Post Burst Increase A	42 Series of Bursts	47 Great Burst	
5 Simple	21 Simple 3A	26 Fall	31 Post Burst Decrease	43 Onset of Noise Storm	48 Major	
					49 Major +	

SELECTED SOLAR NOISE BURSTS

AUGUST 10-13, 1980

SOLAR WIND

Interplanetary Scintillations

AUGUST 1980

DATE	DOY	UT HR	VMID KM/S	ERR	VPK KM/S	ERR	RATING 1-4	SOURCE	ELONG DEG	LAT DEG	DIST AU	DLON DEG	LAG DAY	ROTATION NUMBER
800801	214	0	263	35	321	83	2	3C283	76	0	0.97	-16	-1.47	1697.76
	214	13	326	*	380	*	2	3C48	94	13	1.06	15	1.49	1697.72
	214	14	525	*	579	*	2	3C144-	46	6	0.72	46	2.44	1697.77
	214	16	447	*	434	*	2	3C147	49	30	0.75	36	1.67	1697.78
	214	17	496	*	491	*	2	3C144	46	6	0.72	45	2.31	1697.77
	214	18	417	*	375	*	2	3C161	42	-25	0.67	38	1.37	1697.78
	214	19	398	*	414	*	2	3C144+	46	6	0.72	44	1.99	1697.75
800802	215	0	311	25	350	29	3	3C283	75	0	0.97	-17	-1.51	1697.84
	215	2	302	14	322	18	2	3C298	81	10	1.00	-17	-1.31	1697.83
	215	13	452	92	388	30	2	3C48	95	13	1.07	14	1.34	1697.82
	215	14	338	20	342	39	3	3C144-	47	6	0.73	43	1.77	1697.76
	215	16	310	11	280	10	3	3C147	50	29	0.77	35	1.20	1697.76
	215	17	329	14	321	13	4	3C144	47	6	0.73	44	1.77	1697.76
	215	18	369	10	362	10	4	3C161	43	-24	0.68	37	1.17	1697.80
	215	20	387	48	208	18	2	3C216	26	70	0.44	13	-1.78	1697.92
800803	216	0	324	15	322	14	3	3C283	74	0	0.96	-16	-1.50	1697.88
	216	1	288	10	279	20	2	3C295	70	24	0.94	-10	-1.16	1697.85
	216	2	342	8	370	8	3	3C298	80	10	0.99	-17	-1.35	1697.89
	216	13	374	16	375	17	4	3C48	96	13	1.07	16	1.54	1697.82
	216	14	399	*	390	*	2	3C123	60	12	0.87	30	1.63	1697.83
	216	14	331	11	336	12	4	3C144-	48	6	0.74	42	1.73	1697.79
	216	16	306	8	291	8	3	3C147	51	29	0.78	34	1.19	1697.80
	216	17	347	11	335	15	3	3C144	48	6	0.74	43	1.84	1697.80
	216	18	322	8	324	8	3	3C161	44	-23	0.69	37	0.96	1697.82
	216	19	414	110	230	28	2	3C196	32	54	0.53	40	0.88	1697.87
	216	19	317	14	319	14	3	3C144+	48	6	0.74	43	1.71	1697.79
800804	217	0	448	21	422	16	3	3C283	74	0	0.96	-16	-1.43	1697.97
	217	11	271	6	254	27	2	3C459	140	9	1.24	10	2.38	1697.75
	217	13	350	7	346	7	4	3C48	97	13	1.08	16	1.58	1697.84
	217	14	399	18	427	35	3	3C144-	49	6	0.75	41	1.93	1697.85
	217	16	340	18	356	59	2	3C147	51	28	0.78	34	1.35	1697.85
	217	17	379	12	369	12	3	3C144	49	6	0.75	42	1.91	1697.85
	217	18	459	15	428	45	3	3C161	44	-23	0.69	37	1.55	1697.90
	217	19	387	35	298	18	2	3C144+	49	6	0.75	42	1.93	1697.86
	217	23	354	15	361	15	3	3C273	55	7	0.82	-35	-3.67	1698.05
800805	218	0	359	18	372	24	3	3C283	73	0	0.96	-16	-1.47	1697.98
	218	2	369	17	334	39	3	3C298	78	10	0.98	-16	-1.33	1697.98
	218	12	297	9	347	11	3	3C48	98	13	1.08	15	1.61	1697.84
	218	14	422	15	419	15	4	3C144-	49	6	0.75	42	2.03	1697.90
	218	16	392	20	336	17	3	3C147	52	27	0.79	34	1.54	1697.91
	218	17	436	11	440	11	4	3C144	50	6	0.77	41	2.10	1697.90
	218	18	396	12	393	11	4	3C161	45	-22	0.71	37	1.36	1697.92
	218	19	357	19	339	18	3	3C144+	50	6	0.77	41	1.83	1697.88
	218	20	304	74	382	82	2	3C216	26	67	0.44	27	-1.42	1697.97
	218	21	310	34	323	15	2	3C237	18	-13	0.31	-70	-9.49	1698.27
	218	23	407	13	373	12	2	3C273	54	7	0.81	-36	-3.66	1698.11
800806	219	0	405	10	422	11	4	3C283	72	0	0.95	-17	-1.56	1698.04
	219	2	299	27	439	12	2	3C298	77	11	0.98	-17	-1.45	1697.98
	219	12	488	17	445	20	2	3C48	99	13	1.09	16	1.49	1697.97
	219	14	423	43	401	22	3	3C144-	50	6	0.77	41	2.04	1697.93
	219	15	308	70	365	60	2	3C147	53	27	0.80	33	1.23	1697.90
	219	17	478	22	451	33	3	3C144	51	6	0.78	40	2.09	1697.95
	219	17	320	13	346	53	3	3C161	46	-21	0.72	35	1.00	1697.92
	219	19	445	75	298	17	2	3C144+	51	6	0.78	41	2.11	1697.95
	219	23	348	13	358	14	2	3C273	53	7	0.80	-37	-3.91	1698.13
800807	220	2	433	55	347	13	2	3C298	76	11	0.97	-18	-1.49	1698.08
	220	12	256	26	276	44	2	3C48	100	13	1.09	15	1.75	1697.87
	220	14	498	24	461	62	3	3C144-	51	6	0.78	39	2.10	1697.99
	220	15	305	14	278	13	2	3C147	54	26	0.81	32	1.25	1697.94
	220	17	483	18	396	61	4	3C144	52	6	0.79	39	2.13	1697.99
	220	18	343	11	298	13	3	3C161	46	-20	0.72	36	1.17	1697.97
	220	19	271	30	301	17	3	3C196	34	50	0.56	43	0.18	1697.96

SOLAR WIND

Interplanetary Scintillations

AUGUST 1980

DATE	DOY	UT HR	VMID KM/S	ERR	VPK KM/S	ERR	RATING 1-4	SOURCE	ELONG DEG	LAT DEG	DIST AU	DLON DEG	LAG DAY	ROTATION NUMBER
	220	19	271	30	301	17	3	3C196	34	50	0.56	43	0.18	1697.96
	220	19	277	29	256	26	2	3C144+	52	6	0.79	40	1.54	1697.91
800808	221	0	253	34	279	15	2	3C283	70	0	0.94	-19	-1.90	1698.02
	221	2	230	52	271	20	2	3C298	75	11	0.97	-16	-1.50	1697.98
	221	15	328	21	329	27	2	3C147	55	26	0.82	31	1.30	1697.99
	221	16	514	12	537	31	4	3C144	52	6	0.79	38	2.06	1698.04
	221	17	398	21	301	14	2	3C161	47	-20	0.73	35	1.39	1698.03
	221	18	272	58	315	66	2	3C196	35	49	0.57	42	0.21	1697.99
	221	19	401	60	462	44	2	3C144+	53	6	0.80	38	1.88	1698.01
	221	22	237	71	350	226	2	3C273	51	7	0.78	-39	-4.74	1698.14
800809	222	2	274	64	333	19	2	3C298	74	11	0.96	-17	-1.56	1698.07
	222	12	349	58	354	115	2	3C48	101	13	1.10	14	1.56	1698.02
	222	14	373	23	371	15	4	3C144-	53	6	0.80	38	1.83	1698.03
	222	15	345	9	352	10	3	3C147	55	25	0.82	31	1.35	1698.03
	222	16	366	9	358	9	4	3C144	53	6	0.80	38	1.81	1698.03
	222	17	459	25	386	35	4	3C161	48	-19	0.74	35	1.55	1698.08
	222	19	300	40	338	15	2	3C144+	54	6	0.81	36	1.53	1698.00
800810	223	14	421	*	344	*	2	3C144-	54	6	0.81	37	1.94	1698.09
	223	16	505	*	396	*	2	3C144	54	6	0.81	37	2.07	1698.11
	223	17	270	*	291	*	2	3C161	49	-18	0.75	33	0.76	1698.04
800811	224	2	303	7	312	23	2	3C298	72	11	0.95	-17	-1.60	1698.17
	224	12	376	34	372	20	2	3C48	103	13	1.11	14	1.57	1698.11
	224	14	373	16	360	15	3	3C144-	55	6	0.82	36	1.75	1698.11
	224	15	356	13	376	40	2	3C147	57	24	0.84	31	1.44	1698.11
	224	16	345	8	341	8	3	3C144	55	6	0.82	35	1.65	1698.10
	224	17	302	7	277	7	3	3C161	49	-18	0.75	34	1.04	1698.09
800812	225	12	349	47	262	18	2	3C48	104	13	1.11	14	1.64	1698.13
	225	14	312	13	318	13	3	3C144-	56	6	0.83	34	1.54	1698.11
	225	16	346	11	319	11	3	3C144	56	6	0.83	35	1.67	1698.13
	225	17	324	16	336	50	2	3C161	50	-17	0.77	33	1.15	1698.14
	225	18	203	15	191	56	2	3C196	37	45	0.60	43	-0.45	1698.08
800813	226	0	256	21	303	15	2	3C283	65	-1	0.91	-22	-2.42	1698.23
	226	1	278	27	306	9	2	3C298	71	12	0.95	-19	-1.84	1698.23
	226	12	335	10	378	68	2	3C48	105	13	1.12	14	1.64	1698.16
	226	14	305	13	300	13	2	3C144-	57	6	0.84	33	1.48	1698.15
	226	15	304	17	289	12	2	3C147	59	23	0.86	28	1.23	1698.16
	226	16	341	19	324	9	3	3C144	57	6	0.84	33	1.59	1698.17
	226	17	330	48	356	111	2	3C161	51	-16	0.78	33	1.18	1698.18
	226	22	244	15	204	70	2	3C273	46	8	0.72	-43	-5.43	1698.36
	226	23	334	12	270	39	2	3C283	64	-2	0.90	-25	-2.46	1698.32
800814	227	1	250	18	291	18	3	3C298	70	12	0.94	-20	-1.99	1698.24
	227	12	328	19	252	7	3	3C48	106	13	1.12	14	1.68	1698.19
	227	14	369	25	303	31	3	3C144-	58	6	0.85	33	1.70	1698.22
	227	15	363	14	341	13	3	3C147	59	23	0.86	29	1.39	1698.23
	227	16	325	16	347	11	3	3C144	58	6	0.85	33	1.62	1698.20
	227	17	306	14	277	35	3	3C161	52	-16	0.79	31	1.04	1698.21
	227	19	343	24	278	29	2	3C144+	58	6	0.85	32	1.55	1698.21
	227	19	338	13	268	10	2	3C216	30	56	0.50	44	0.56	1698.25
800816	229	2	295	11	403	8	3	3C298	68	13	0.93	-21	-2.06	1698.36
	229	12	322	17	271	9	3	3C48	108	13	1.13	14	1.80	1698.26
	229	13	347	15	334	11	4	3C144-	60	6	0.87	30	1.53	1698.28
	229	15	363	17	360	18	2	3C147	61	21	0.87	26	1.31	1698.30
	229	16	325	11	335	11	4	3C144	60	6	0.87	31	1.55	1698.27
	229	17	363	12	316	19	3	3C161	53	-14	0.80	31	1.31	1698.31
	229	18	360	34	357	21	2	3C144+	60	6	0.87	30	1.57	1698.30
	229	19	233	10	214	12	2	3C216	31	53	0.52	46	-0.41	1698.27
	229	22	316	25	292	37	2	3C273	43	8	0.68	-47	-5.43	1698.53
	229	23	355	10	340	12	3	3C283	62	-3	0.88	-27	-2.67	1698.46
800817	230	1	371	10	388	10	3	3C298	67	13	0.92	-22	-2.14	1698.45
	230	12	359	50	359	12	2	3C48	109	13	1.13	14	1.71	1698.32
	230	13	324	12	297	11	3	3C144-	61	6	0.87	30	1.53	1698.31
	230	16	314	9	326	10	3	3C144	61	6	0.87	29	1.42	1698.31
	230	17	344	14	349	14	2	3C161	54	-14	0.81	31	1.26	1698.33

SOLAR WIND

Interplanetary Scintillations

AUGUST 1980

DATE	DOY	UT HR	VMID KM/S	ERR	VPK KM/S	ERR	RATING 1-4	SOURCE	ELONG DEG	LAT DEG	DIST AU	DLON DEG	LAG DAY	ROTATION NUMBER
	230	18	289	16	301	27	2	3C196	40	40	0.64	42	0.83	1698.31
	230	18	257	12	286	14	2	3C144+	61	6	0.87	30	1.32	1698.27
	230	22	394	19	297	19	2	3C273	42	9	0.67	-47	-5.18	1698.60
	230	23	383	42	354	11	2	3C283	61	-3	0.87	-28	-2.74	1698.51
800818	231	1	367	9	340	39	3	3C298	66	14	0.91	-23	-2.19	1698.48
	231	12	293	9	376	24	3	3C48	109	13	1.13	13	1.83	1698.31
	231	13	350	14	340	21	3	3C144-	62	6	0.88	29	1.50	1698.36
	231	15	346	12	337	11	2	3C147	63	21	0.89	25	1.29	1698.37
	231	16	367	12	372	9	4	3C144	62	6	0.88	29	1.60	1698.37
	231	18	348	37	338	36	2	3C196	41	39	0.66	42	1.32	1698.37
	231	18	337	38	336	34	3	3C144+	62	6	0.88	29	1.52	1698.36
	231	19	420	23	417	82	2	3C216	32	51	0.53	47	1.40	1698.40
	231	22	431	47	374	29	2	3C273	41	9	0.66	-48	-5.15	1698.65
	231	23	399	85	366	26	2	3C283	60	-3	0.87	-29	-2.85	1698.56
800819	232	0	373	15	353	24	2	3C295	64	31	0.90	-10	-1.28	1698.49
	232	1	386	14	366	14	3	3C298	65	14	0.91	-23	-2.24	1698.53
	232	12	445	8	460	8	4	3C48	110	13	1.14	14	1.58	1698.43
	232	13	395	21	362	19	2	3C123	75	10	0.97	18	1.20	1698.43
	232	13	409	13	407	13	4	3C144-	63	6	0.89	27	1.51	1698.42
	232	15	451	23	455	13	4	3C147	64	20	0.90	24	1.33	1698.45
	232	15	402	17	422	18	4	3C144	63	7	0.89	27	1.51	1698.42
	232	17	370	17	376	22	2	3C161	55	-13	0.82	29	1.26	1698.42
	232	19	354	19	411	59	2	3C216	32	49	0.53	48	1.11	1698.42
	232	22	266	21	310	24	2	3C273	40	9	0.64	-49	-6.24	1698.63
	232	23	276	37	293	17	2	3C283	59	-3	0.86	-29	-3.18	1698.53
800820	233	11	355	8	388	11	3	3C48	111	13	1.14	13	1.73	1698.42
	233	13	369	15	367	15	4	3C144-	64	7	0.90	27	1.47	1698.44
	233	15	355	30	363	44	2	3C147	64	20	0.90	23	1.20	1698.45
	233	16	372	10	378	12	4	3C144	64	7	0.90	26	1.44	1698.45
	233	17	418	21	434	33	2	3C161	56	-12	0.83	30	1.46	1698.47
	233	18	398	22	329	18	2	3C196	42	37	0.67	41	1.54	1698.46
	233	18	412	51	386	59	2	3C144+	64	7	0.90	27	1.54	1698.47
	233	19	410	30	321	17	2	3C216	33	48	0.54	48	1.52	1698.47
	233	23	533	18	442	14	3	3C283	58	-4	0.85	-30	-2.81	1698.67
800821	234	1	464	12	473	12	3	3C298	64	15	0.90	-25	-2.34	1698.64
	234	11	282	27	381	23	2	3C48	112	13	1.15	13	1.89	1698.40
	234	13	368	19	360	18	4	3C144-	65	7	0.91	26	1.46	1698.48
	234	15	467	15	484	15	3	3C147	65	19	0.91	23	1.32	1698.53
	234	16	412	11	411	11	4	3C144	65	7	0.91	25	1.47	1698.50
	234	18	204	41	261	56	2	3C196	43	36	0.68	40	0.12	1698.39
800822	235	1	438	18	395	10	3	3C298	63	15	0.89	-26	-2.51	1698.67
	235	11	406	7	413	8	3	3C48	113	13	1.15	14	1.71	1698.52
	235	13	348	14	348	14	4	3C144-	66	7	0.91	25	1.40	1698.51
	235	14	385	41	361	12	2	3C147	66	19	0.91	22	1.23	1698.53
	235	15	353	13	360	14	4	3C144	66	7	0.91	25	1.40	1698.52
	235	17	309	68	336	25	2	3C161	58	-11	0.85	27	1.10	1698.50
	235	18	223	21	265	98	2	3C196	44	35	0.69	40	0.44	1698.44
	235	18	353	44	358	39	2	3C144+	66	7	0.91	26	1.47	1698.52
	235	22	360	68	332	18	2	3C273	38	10	0.62	-53	-6.00	1698.80
	235	23	401	19	378	19	3	3C283	56	-4	0.83	-32	-3.28	1698.72
800823	236	1	315	10	340	25	3	3C298	62	16	0.88	-27	-2.80	1698.66
	236	11	401	10	347	9	3	3C48	114	13	1.16	14	1.72	1698.56
	236	13	329	16	373	21	3	3C144-	67	7	0.92	24	1.31	1698.54
	236	14	464	37	377	74	2	3C147	67	18	0.92	22	1.29	1698.60
	236	15	346	12	386	13	3	3C144	67	7	0.92	23	1.29	1698.55
	236	17	245	28	374	144	2	3C161	59	-10	0.86	27	0.89	1698.49
	236	17	482	27	365	19	2	3C196	45	35	0.71	38	1.75	1698.59
	236	19	318	81	430	19	2	3C216	35	45	0.57	46	0.97	1698.55
	236	22	294	69	320	14	2	3C273	37	10	0.60	-54	-6.63	1698.82
	236	23	344	11	351	11	4	3C283	55	-5	0.82	-32	-3.44	1698.74
800824	237	1	377	10	345	29	3	3C298	61	16	0.87	-27	-2.74	1698.73
	237	11	350	45	279	22	2	3C48	115	13	1.16	12	1.73	1698.57
	237	13	394	16	374	15	3	3C144-	68	7	0.93	23	1.34	1698.61

SOLAR WIND

Interplanetary Scintillations

AUGUST 1980

DATE	DOY	UT HR	VMID KM/S	ERR	VPK KM/S	ERR	RATING 1-4	SOURCE	ELONG DEG	LAT DEG	DIST AU	DLON DEG	LAG DAY	ROTATION NUMBER
	237	14	337	23	317	12	2	3C147	68	18	0.93	21	1.15	1698.59
	237	15	395	12	385	23	3	3C144	68	7	0.93	22	1.27	1698.61
	237	17	339	16	297	14	3	3C196	45	34	0.71	39	1.33	1698.58
	237	18	260	29	322	117	2	3C216	35	43	0.57	47	0.50	1698.56
800825	238	1	250	56	282	42	2	3C298	60	16	0.87	-29	-3.20	1698.69
	238	11	301	8	315	9	3	3C48	116	13	1.16	13	1.92	1698.57
	238	13	431	20	465	21	3	3C144-	69	7	0.93	21	1.29	1698.66
	238	14	412	13	410	13	3	3C147	69	17	0.93	20	1.17	1698.66
	238	16	295	18	310	19	2	3C161	60	-9	0.87	25	1.04	1698.60
	238	17	326	*	267	*	2	3C196	46	33	0.72	39	1.34	1698.61
	238	18	384	*	463	*	2	3C144+	69	7	0.93	22	1.29	1698.65
	238	18	318	12	383	75	2	3C216	36	42	0.59	47	1.12	1698.62
	238	21	267	17	295	13	3	3C273	35	11	0.57	-55	-7.20	1698.89
	238	22	399	22	368	21	3	3C283	53	-5	0.80	-35	-3.60	1698.84
800826	239	1	335	12	301	22	3	3C298	59	17	0.86	-30	-3.13	1698.79
	239	11	338	26	359	13	2	3C48	116	13	1.16	13	1.84	1698.63
	239	13	369	27	299	13	2	3C144-	70	7	0.94	22	1.32	1698.67
	239	15	351	9	336	9	3	3C144	70	7	0.94	21	1.21	1698.67
	239	16	294	7	301	7	4	3C161	61	-9	0.87	24	1.02	1698.64
	239	17	266	16	271	17	2	3C196	47	32	0.73	38	0.96	1698.62
	239	18	305	25	335	18	2	3C144+	70	7	0.94	21	1.17	1698.64
800827	240	1	348	8	335	8	3	3C298	58	17	0.85	-31	-3.23	1698.84
	240	7	496	34	401	13	2	3C409	134	16	1.23	-3	0.57	1698.77
	240	11	309	*	353	*	2	3C48	117	13	1.17	13	1.93	1698.64
	240	13	335	14	320	13	4	3C144-	71	7	0.95	20	1.19	1698.69
	240	14	347	10	346	27	2	3C147	70	16	0.94	18	1.00	1698.71
	240	15	355	15	359	14	4	3C144	71	7	0.95	20	1.20	1698.71
	240	16	416	23	404	34	3	3C161	62	-8	0.88	24	1.29	1698.73
	240	18	377	25	328	52	2	3C144+	71	7	0.95	20	1.20	1698.72
	240	18	250	11	240	24	2	3C216	37	40	0.60	47	0.59	1698.65
	240	22	230	*	255	*	2	3C283	51	-6	0.78	-35	-4.53	1698.82
800828	241	1	398	16	395	27	4	3C298	57	18	0.84	-31	-3.16	1698.90
	241	11	325	37	324	35	3	3C48	118	13	1.17	13	1.93	1698.69
	241	14	394	33	366	13	2	3C147	71	16	0.95	19	1.11	1698.77
	241	15	386	16	357	16	3	3C144	72	7	0.95	19	1.16	1698.76
800829	242	1	346	49	397	48	2	3C298	56	18	0.83	-31	-3.33	1698.92
	242	11	351	14	356	41	2	3C48	119	13	1.18	12	1.82	1698.75
	242	13	341	14	333	20	3	3C144-	73	7	0.96	18	1.06	1698.77
	242	14	365	16	279	12	2	3C147	72	16	0.95	17	0.96	1698.79
	242	15	349	8	347	8	4	3C144	73	7	0.96	18	1.11	1698.78
	242	16	332	7	317	7	3	3C161	63	-7	0.89	24	1.14	1698.77
	242	18	310	14	379	18	2	3C144+	73	7	0.96	18	1.04	1698.76
	242	22	221	11	284	14	2	3C283	50	-7	0.77	-39	-4.93	1698.90
800830	243	1	346	14	326	32	2	3C298	55	18	0.82	-33	-3.48	1698.96
	243	11	354	39	366	8	2	3C48	120	13	1.18	12	1.79	1698.79
	243	12	325	32	415	63	2	3C144-	73	7	0.96	18	1.09	1698.80
	243	15	354	12	352	12	3	3C144	74	7	0.96	19	1.18	1698.82
	243	16	439	44	384	30	2	3C161	64	-7	0.90	22	1.22	1698.85
	243	18	302	17	373	65	2	3C216	39	37	0.63	45	1.11	1698.79
	243	22	324	11	282	9	3	3C283	49	-7	0.75	-40	-4.46	1699.01
800831	244	1	266	8	303	21	2	3C298	55	19	0.82	-34	-3.89	1698.95
	244	12	256	20	349	27	2	3C144-	74	7	0.96	18	1.07	1698.78
	244	15	347	21	330	33	3	3C144	75	7	0.97	18	1.15	1698.85
	244	16	431	11	362	9	2	3C161	65	-6	0.91	21	1.14	1698.89
	244	18	287	13	362	13	2	3C216	40	36	0.64	44	1.02	1698.82
	244	22	400	15	400	50	2	3C283	48	-7	0.74	-39	-4.20	1699.08

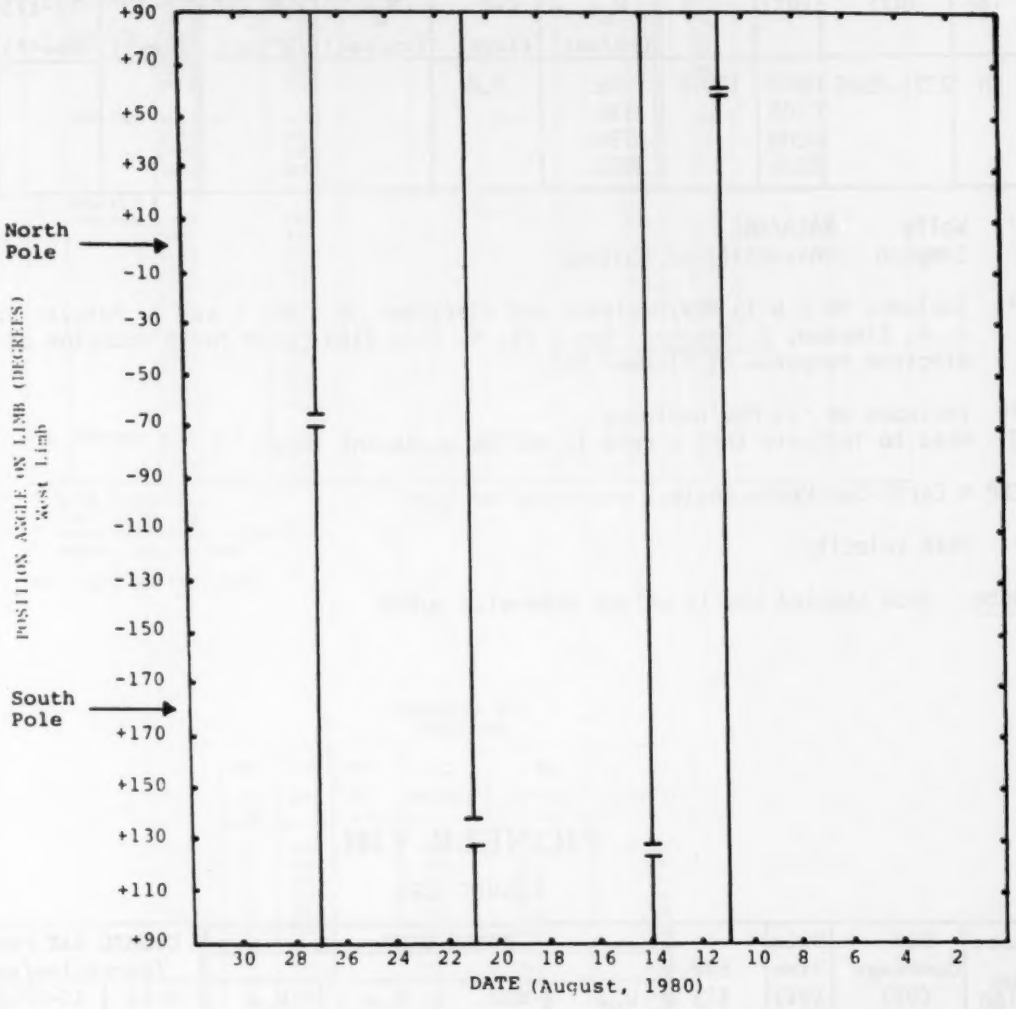
VMID IS A MEAN AND VPK IS A MAXIMUM VELOCITY IN THE IPS SCATTERING REGION.
THE REGION'S CENTROID IS SPECIFIED BY LAT, DIST, DLON.
LAG AND ROTATION NUMBER GIVE MAPPING TO EARTH AND SUN AT VMID.
* INDICATES NO ERROR AVAILABLE, SINCE ONLY TWO ANTENNAS WERE OPERATING.

CORONAL HOLES

Helium D3 Chromosphere at Solar Limb

AUGUST 1980

Big Bear Solar Observatory



PIONEER VII

AUGUST 1980

Date Aug '80	DSN Coverage (UT)	Data Time (UT)	ESP (°)	SOLAR WIND AMES[1] U_{H^+} (km/sec)	SOLAR WIND AMES[1] TAU (days)	SOLAR WIND MIT[2] U_{H^+} (km/sec)	SOLAR WIND MIT[2] N_{H^+} (H^+/cc)	COSMIC RAY PROTONS[3] (particles/sec) 6-13 (Mev*)	13-175 (Mev**)	>175 (Mev)
10	2321-0305	0000	120.2	536.	8.8					
		0100		536.						
		0200		536.						
		0300		536.						

[1] Wolfe NASA/ARC
[2] Simpson - University of Chicago

* Includes He 0.6-13 Mev/nucleons and electrons ∿0.5 Mev - see J. Retzler and J. A. Simpson, J. Geophys. Res., 74, 9, 2149-2160, 1969 for discussion of the electron response of Pioneer VII.

** Includes He >13 Mev/nucleons.
Q Used to indicate that a rate is at its quiescent level.

ESP = Earth-Sun Probe Angle.

† Peak velocity.

Note: Data sampled hourly unless otherwise noted.

PIONEER VIII

AUGUST 1980

Date Aug '80	DSN Coverage (UT)	Data Time (UT)	ESP (°)	SOLAR WIND U_{H^+} (km/sec)	SOLAR WIND TAU (days)	SOLAR WIND U_{H^+} (km/sec)	SOLAR WIND N_{H^+} (H^+/cc)	COSMIC RAY PROTONS[3] (particles/sec) 6-13 (Mev*)	13-175 (Mev**)	>175 (Mev)
16	2037-2400	2100	-096.1	325.	-7.1					
		2200		325.						
		2300		325.						
		2400		325.						
17	0000-0255	0100		325.						
		0200		314.						
		0300		303.						

PIONEER IX
AUGUST 1980

Date Aug '80	DSN Coverage (UT)	Data Time (UT)	ESP (°)	SOLAR WIND[1] U_{H^+} (km/sec)	N_{H^+} (H^+/cc)	T_{H^+} (x10^6°K)	TAU (days)	IP Z-FIELD[2] 400 Hz (mv)	IMF[3] |B| (γ)	IMF[3] φ (°)	COSMIC RAY PROTONS[4] (particles/sec) >13.9 Mev	>40 Mev
2	2303-2400	2300	130.9	338.			11.1		9.7	027.		
		2400		338.					9.3	082.		
3	0000-0355	0100		314.					7.3	177.		
		0200		314.					5.6	156.		
		0300		314.					6.	164.		
		0400		325.					4.4	173.		
4	1508-1802	1500	130.4	376.			10.9		7.3	258.		
		1600		376.					14.7	282.		
		1700		338.					12.2	326.		
		1800		338.					14.2	343.		
17	0850-1330 &											
	1918-2400	0900		449.					6.2	019.		
		1000		430.					7.2	017.		
		1100		430.					7.5	019.		
		1200		417.					7.4	014.		
		1300		417.					8.6	031.		
		1400		417.					8.3	033.		
		1900		376.					6.2	067.		
		2000		376.					6.4	157.		
		2100		376.					6.3	260.		
		2200		376.					5.3	116.		
		2300		363.					7.2	276.		
		2400		363.					11.4	158.		
18	0000-0240	0100	122.3	350.			10.4		11.1	155.		
		0200		350.					12.9	162.		
		0300		376.					5.9	165.		

[1] Wolfe - NASA/ARC
[2] Scarf - TRW, Inc.
[3] Sonett and Colburn - NASA/ARC
[4] Webber - Univ. of N.H.

Note: Data sampled hourly unless otherwise noted.

ESP = Earth-Sun Probe Angle.

PIONEER XII
AUGUST 1980

DATE AUG 80	TIME (UT)	ESV (°)	U_{H+} (Km/sec)	N_{H+} (H^+/CC)	T_{H+} (x10^6°K)
1	2054	029.	423.	7.5	0.103
2	1626		394.	14.3	.039
3	1857		358.	20.6	.095
4	2333		395.	18.	.086
5	2041		402.	15.8	.109
6	1854		395.	12.5	.118
7	0606		407.	13.	.104
8	0012		349.	18.3	.111
9	1904		332.	13.9	.146
10	1648		329.	45.5	.039
11	2127		289.	104.5	.035
12	2009		311.	18.	.046
13	1827		293.	35.7	.043
14	1737		286.	53.9	.072
15	2009	038.	288.	36.8	.182
16	1831		286.	32.1	.105
17	1916		284.	32.7	.062
18	1843		319.	21.9	.047
19	1849		352.	21.9	.041
20	2000		410.	10.	.058
21	1939		339.	48.4	.07
22	0018		347	32.6	.183
23	1808		529.	16.	.198
24	1154		527.	9.	.4
25	1811		436.	5.7	.093
26	2147		321.	28.5	.027
27	2108		280.	54.1	.061
28	1752		422.	21.8	.223
29	1858		454.	10.4	.11
30	1743		322.	20.7	.07
31	0100		317.	29.6	.08

INFERRED IP MAGNETIC FIELD

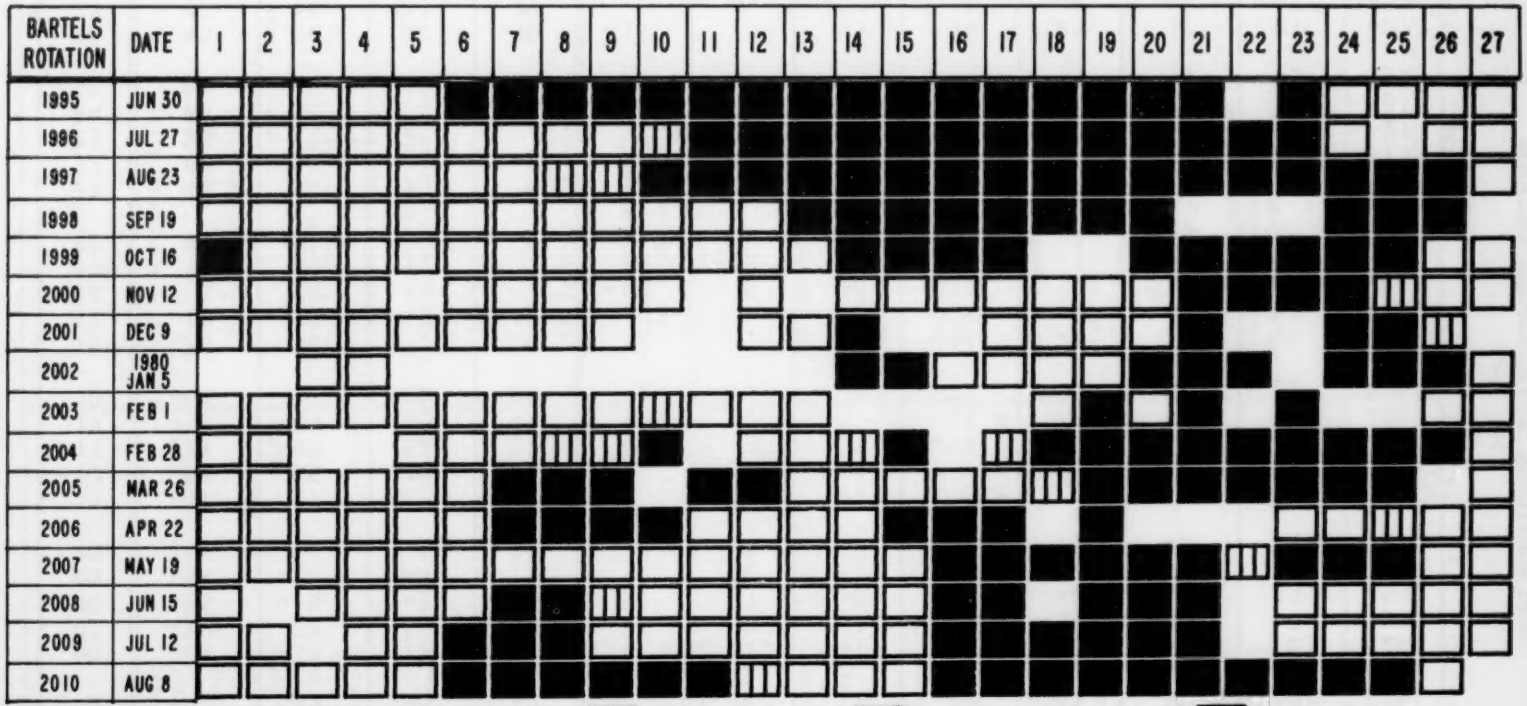
BARTELS ROTATION	DATE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1992	APR 15		A*	TA	T*	AT				TA	TA						TA		*	-	-	AT	-	TA				A*			-	TA
1993	MAY 12									-	-		AT			*		TA				AT	AT						-	-	-	-
1994	JUN 8	TA	TA	A*		TA					-	AT		-						T*	-	TA			TA	T*			AT	T*	-	TA	
1995	JUL 5	TA	TA		AT			TA		AT	A*	TA		TA		AT					*			TA	T*							TA
1996	AUG 1			AT		A*	-			TA	-	-	-	T*				*	-			AT					AT	*				
1997	AUG 28				-	A*						AT							-		-		T*		-	AT	TA	-		TA	AT		
1998	SEP 24							A*		AT			TA		A*	*			TA			-			TA			TA		TA	-		*
1999	OCT 21										T*		TA		-						AT		AT	*		AT							
2000	NOV 17		-	TA	-			AT				*				AT				AT	-	TA		-		TA			-		-		
2001	DEC 14									TA			TA		-	-	AT	-				AT			AT	*		TA	AT		T*				-
2002	1980 JAN 10							AT			-			-	TA	AT			T*		TA		AT							TA			A*	
2003	FEB 6		TA				-					A*						TA						-					*	TA		TA		
2004	MAR 4		AT			TA			AT		-		TA			T*			AT	AT			TA				AT		AT	TA			TA	-	-
2005	MAR 31		TA		AT	AT	AT			AT		TA		T*			TA	TA					TA					TA		AT	AT	AT	AT	TA	TA	
2006	APR 27		AT					AT	-				TA		AT				TA	AT	AT									TA		AT		*		TA
2007	MAY 24				AT		AT			*		*	-	-		-	-	-	-	TA					*	TA				-				-	TA	
2008	JUN 20			-					AT			-	-			-									TA				TA			TA			
2009	JUL 17		-		AT			-					-			TA	TA		-		AT	AT			-				-		-	A*	-		-
2010	AUG 13		AT						-	AT	-						-			-	AT														

= definitely towards the sun = definitely away from the sun

T = towards the sun A = away from the sun * = effect doubtful or not discernible - = missing data

The table shows daily inferences of the polarity of the interplanetary magnetic field. The first half of the day is based principally on magnetograms produced by the magnetometer at the Vostok Antarctic Station of the USSR. The magnetometer of the U.S. Air Weather Service now operated at Thule by the Danish Meteorological Institute is used for the second half of the day.

STANFORD MEAN SOLAR MAGNETIC FIELD



POLARITY OF THE MEAN SOLAR MAGNETIC FIELD: ☐ = FIELD >2μT, ▥ = -2μT ≤FIELD ≤2μT, ■ = FIELD <-2μT

No box visible indicates no data available for that day.

NOTE: Data are taken daily at 2000 UT. Dates given are not Bartels Rotation dates. These earlier dates correspond to the occurrence of phenomena on the Sun that affect the Earth during the given Bartels Rotation.

STANFORD MEAN SOLAR MAGNETIC FIELD (MICROTESLA)

	1979				1980							
DAY	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.
01	-5	-32	-6	16	-37	94	.	-10	-7	37	-51	-5
02	-8	-27	.	-3	-28	96	.	-26	9	13	.	.
03	-36	-27	.	-24	1	87	50	-21	26	-16	-25	8
04	-28	-36	-5	-18	.	72	53	.	55	-45	-23	7
05	-20	-45	-8	-6	.	72	12	-44	21	-57	-19	10
06	-24	-31	-17	-1	.	57	-1	-17	-13	-42	.	24
07	-39	-22	-12	18	54	49	1	9	-34	-25	8	53
08	-46	-45	-3	35	59	31	-8	4	-42	-11	11	53
09	-54	.	-6	75	.	10	.	7	.	-1	13	44
10	-45	.	6	99	.	0	9	7	-17	-6	23	37
11	-47	.	29	83	.	10	21	5	.	-18	44	27
12	-67	-55	46	60	.	11	1	2	.	-4	42	8
13	-74	-62	52	32	.	3	-7	-15	.	12	34	-37
14	-53	-49	45	44	.	.	.	-18	5	56	.	-63
15	-41	.	26	29	.	.	-2	-12	5	54	57	-65
16	-26	-6	.	20	.	.	-10	-14	-1	.	26	-56
17	-18	20	13	18	.	.	-9	-8	16	63	-42	-44
18	3	29	41	.	-17	5	-8	-10	50	71	-69	-24
19	15	25	35	.	-8	-13	-18	-5	73	55	-43	1
20	41	52	35	7	33	3	-42	.	78	15	5	23
21	46	64	30	6	32	-7	-41	30	92	-40	32	24
22	64	69	.	-6	10	.	-39	95	120	-43	47	11
23	59	48	22	.	3	-32	-24	113	122	-1	53	-11
24	65	50	.	.	-12	.	-20	113	46	33	57	-31
25	63	35	12	35	-25	.	13	100	14	49	53	-38
26	40	26	20	40	-31	6	43	56	25	37	27	-27
27	37	16	27	27	.	43	53	8	64	46	-8	-27
28	24	3	24	23	-34	58	64	-27	57	54	-33	-18
29	21	-9	39	-18	-26	57	84	-28	62	6	-42	-14
30	7	-7	37	.	-13		75	-16	49	-22	-29	-18
31		-22		.	29		25		49		-6	-10

DOT SYMBOL ENTRY INDICATES NO DATA AVAILABLE FOR THE DAY.

DATE 08/01/80 08/02/80 08/03/80 08/04/80 08/05/80 08/06/80 08/07/80 08/08/80 08/09/80 08/10/80 08/11/80 08/12/80 08/13/80 08/14/80 08/15/80 08/16/80 08/17/80 08/18/80 08/19/80 08/20/80 08/21/80 08/22/80 08/23/80 08/24/80 08/25/80 08/26/80 08/27/80 08/28/80 08/29/80 08/30/80 08/31/80

BOULDER GEOMAGNETIC SUBSTORM LOG

AUGUST 1980

DATE	ONSET TIME	DIR	COMMENTS
08/01			Field slightly unsettled.
08/02	1040		Weak SS, Norman Wells - Ft. Simpson only.
	1110		Weak SS, oval stations only. The field at Cape Parry and Sachs Harbour became very active after 2000 UT.
08/03			Field active through 1530 UT with minor storm conditions 0700-1530 UT.
	0720		SS evident at College-Talkeetna and from Boulder westward at mid/low latitude.
	0820		Strong SS
	1230		Moderate SS, several injections with recovery near 1530 UT.
08/04	1150		Slow onset, several minor injections with recovery near 1530 UT.
08/05			Field unsettled along the oval 0800-1400 UT with no distinctive SS activity.
08/06			Field active 0000-0400 UT with no distinctive SS activity.
	1335		Slow rising positive impulse H-component all mid/low latitude stations. Field active at mid/low latitude and polar cap stations with no distinctive SS activity.
08/07	0330	East	Slow onset, several injections with recovery near 0600 UT.
	1145	West	
08/08			Field slightly unsettled.
08/09			Field unsettled after 1400 UT with no distinctive SS activity.
08/10			0400-0645 UT: Component deflections at all network stations. However, profiles are atypical for "normal" SS activity.
	1000	West	Weak SS
08/11			Field intermittently unsettled.
	0545		Weak SS
08/12			Field intermittently unsettled with no distinctive SS activity.
08/13			Field slightly unsettled.
08/14	0830	West	
08/15	1310		Slow onset, weak SS with recovery near 1600 UT. SS along oval only.
08/16	1230	SSC	Minor magstorm conditions through 2000 UT.
	1600		Strong SS along oval stations.
08/17			Field unsettled after 0830 UT.
	1225		Weak SS
08/18			Field intermittently unsettled. Positive bays at 0415 UT and 0515 UT on D component only and only at Boulder and Tucson.
	0850	West	Moderate SS
08/19	0140	East	
	1015		Positive impulse H-component all mid/low latitude stations. Field moderately unsettled balance of day.
	1430		
08/20			Field unsettled after 1000 UT with no distinctive SS activity.
08/21			Field remained unsettled through 0900 UT.
08/22			Field unsettled throughout the day.
	1115		Weak SS
08/23			Quiet day
08/24			Quiet day
08/25			Quiet day through 2200 UT.
08/26			Field intermittently unsettled with no distinctive SS activity.
08/27	0600		Gradual onset to minor magstorm conditions with recovery near 1600 UT.
08/29			Field quiet through 1600 UT, then slightly unsettled balance of day.
08/30			Field slightly unsettled.
	0615		Slow onset, SS intensified with slow expansion northward through Alaska.
08/31			Field intermittently unsettled with no distinctive SS activity.

DOT SYMBOL ENTRY INDICATES NO DATA AVAILABLE FOR THE DAY.

SGD 433 Part 1 (Prompt)

JULY 1980 DATA

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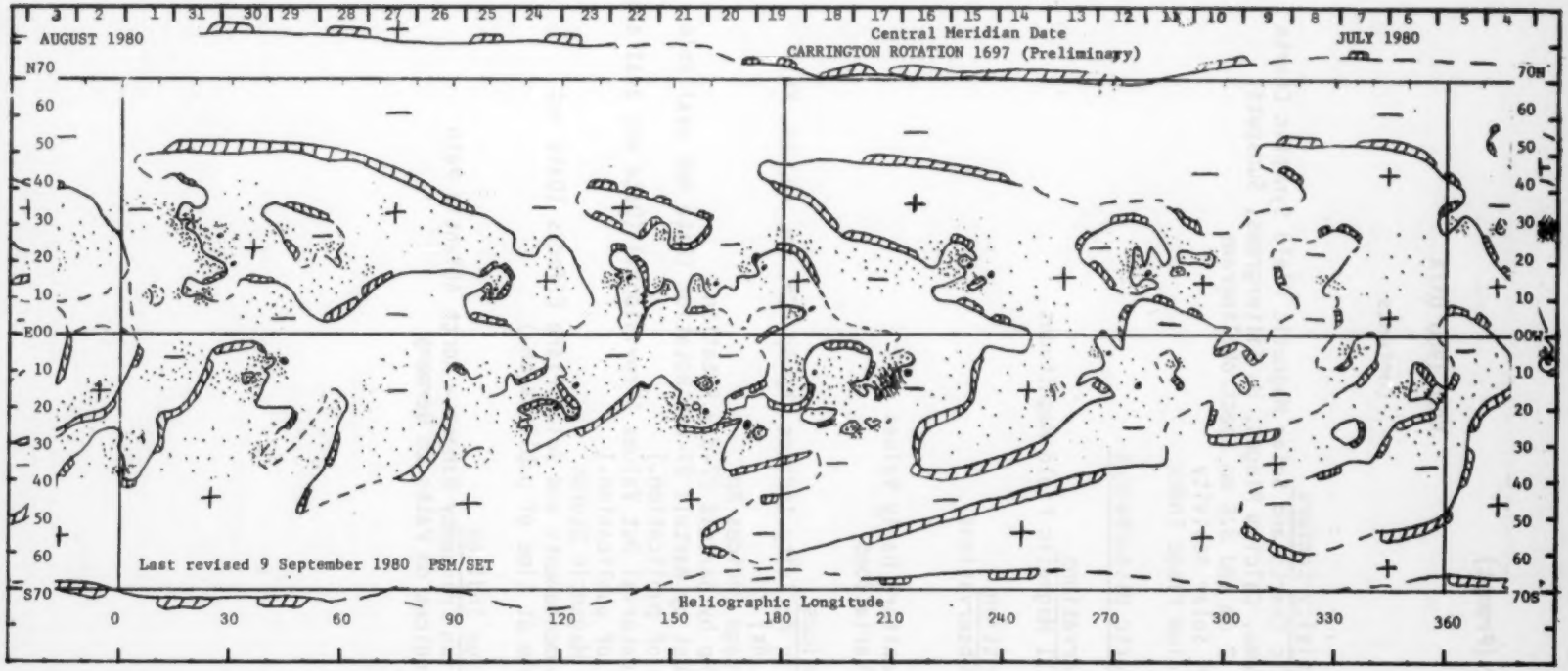
Hα SYNOPTIC CHART

CARRINGTON ROTATION 1697 (PRELIMINARY)

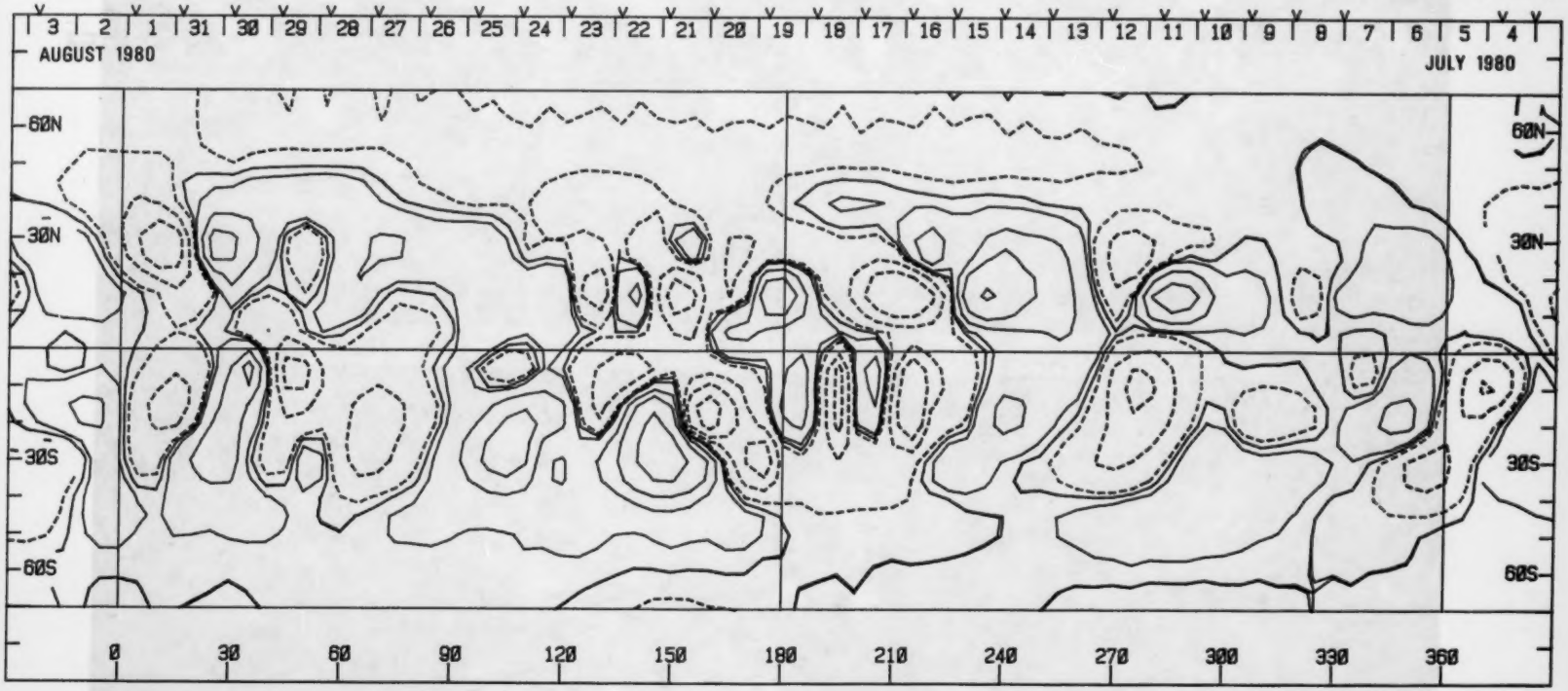


SOLAR MAGNETIC FIELD SYNOPTIC CHART

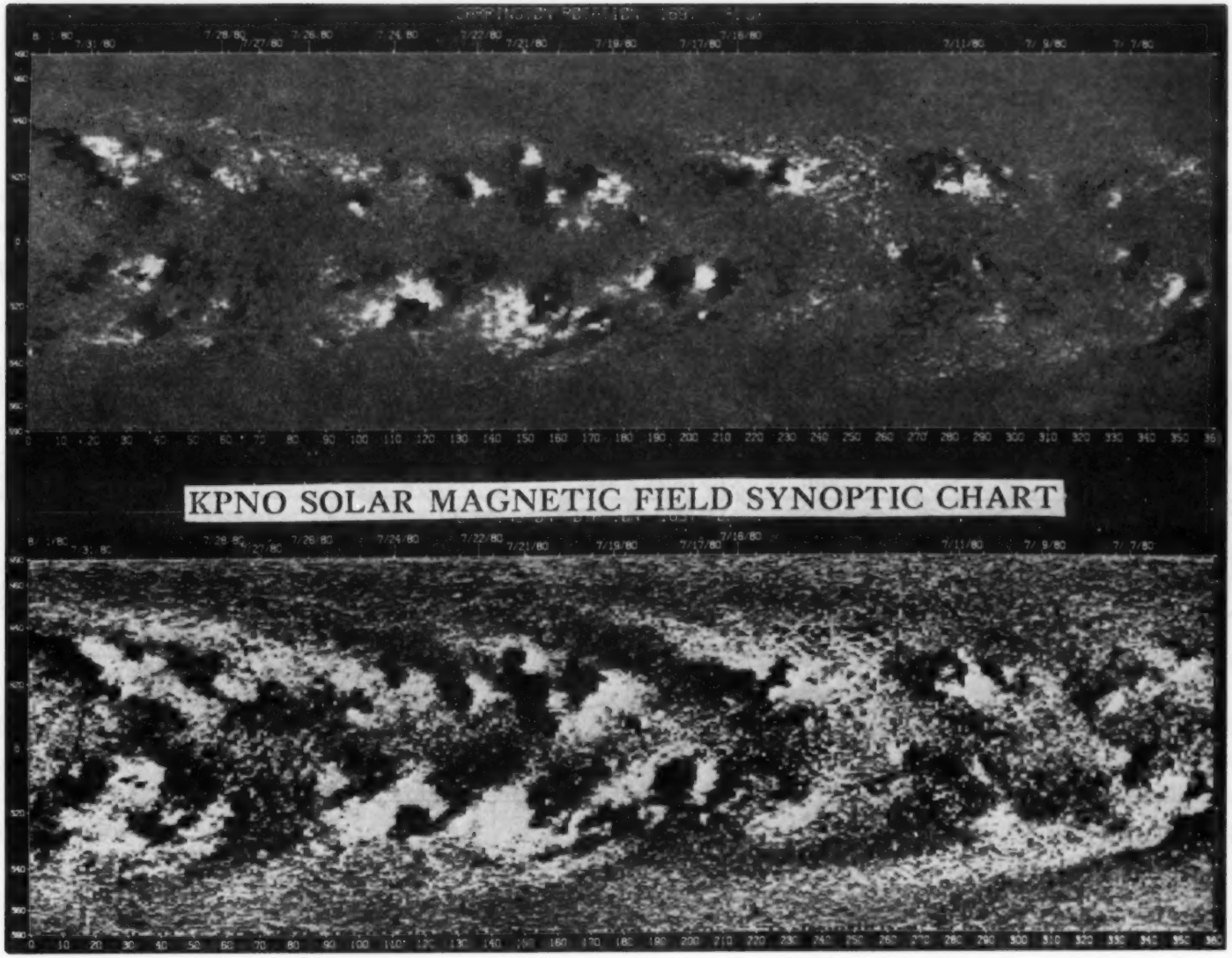
CARRINGTON ROTATION 1697

Stanford Solar Observatory

0.±100.200.500... μT

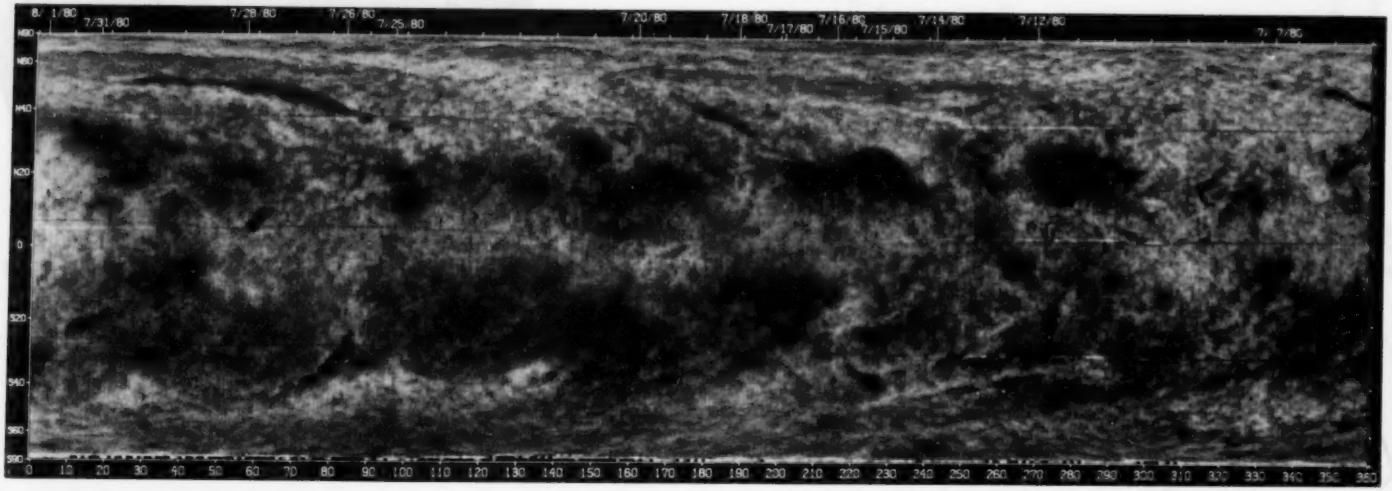


45
Jul 80


KPNO SOLAR MAGNETIC FIELD SYNOPTIC CHART

HELIUM 10830Å SYNOPTIC MAPS
CARRINGTON ROTATION 1697

KITT PEAK NATIONAL OBSERVATORY



JULY 1, 1980 (P=-2.63, B_o=2.92, L_o=63.22)

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å

E

W

2321 UT

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright-Plus
Dark - Minus

E

W

1357 UT

Sp

MT. WILSON

Np

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

E

NO DATA

W

Levels
+ 5
+ + 10
+ + + 20
+ + + + 40
+ + + + + 80

Sp

01

BOULDER

Np

Hα

SAN FERNANDO

Np

SUNSPOTS

HALE OBSERVATORIES

Np

CALCIUM REPORT

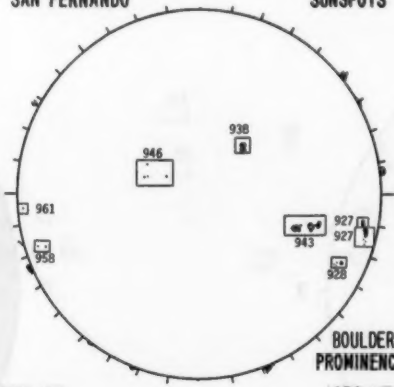
01

BOULDER Np Hα

E W

1450 UT Sp

SAN FERNANDO Np SUNSPOTS



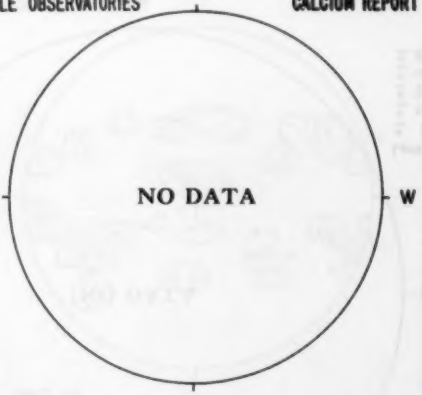
E W

1500 UT Sp

BOULDER PROMINENCES

1450 UT

HALE OBSERVATORIES Np CALCIUM REPORT



E W

Sp

NOSC LA POSTA Np 2.0 CM

NO DATA

E W

SCHEDULE

---- UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

E W

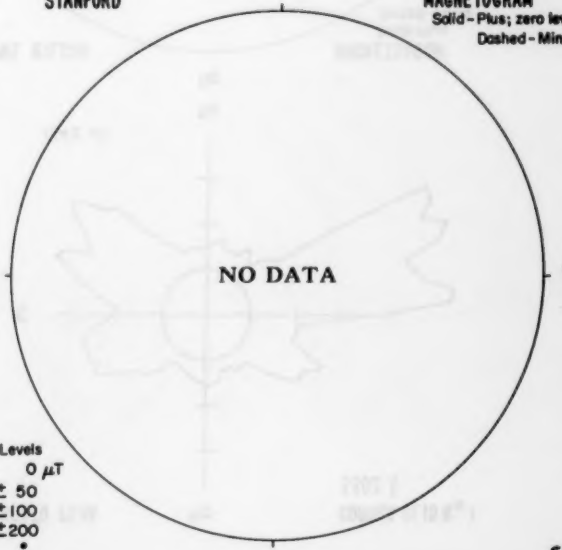
SCHEDULE

---- UT Sp Ant. Temp. Unit 100° K

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Sp

Levels

0 μT

± 50

±100

±200

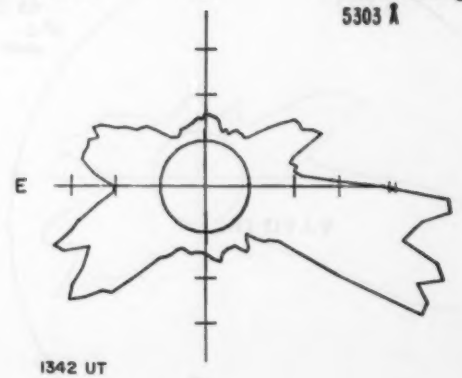
49

Jul 80

JULY 2, 1980 (P=-2.17, B_o=3.03, L_o=49.98)

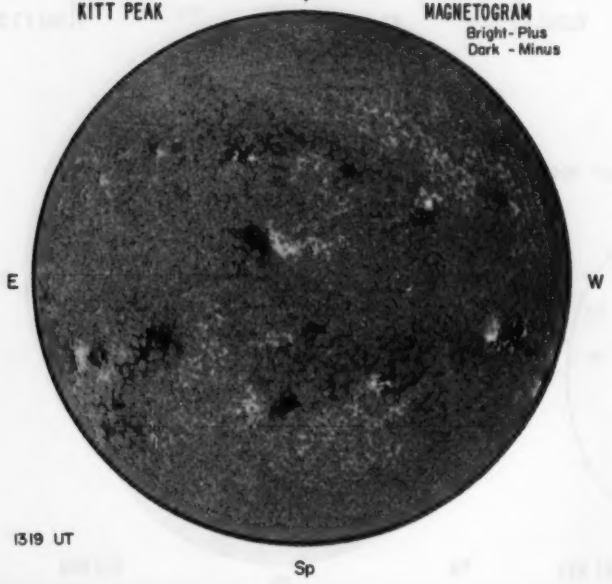
SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å



KITT PEAK

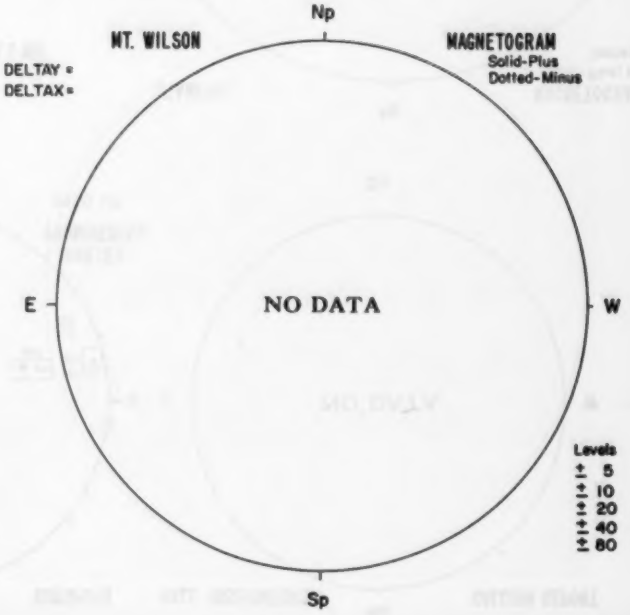
MAGNETOGRAM
Bright - Plus
Dark - Minus



MT. WILSON

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =



02

BIG BEAR

Hα

SAN FERNANDO

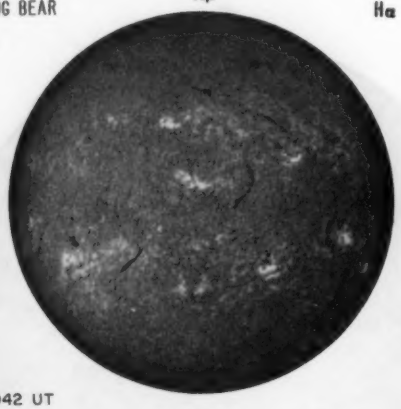
SUNSPOTS

HALE OBSERVATORIES

CALCIUM REPORT

02

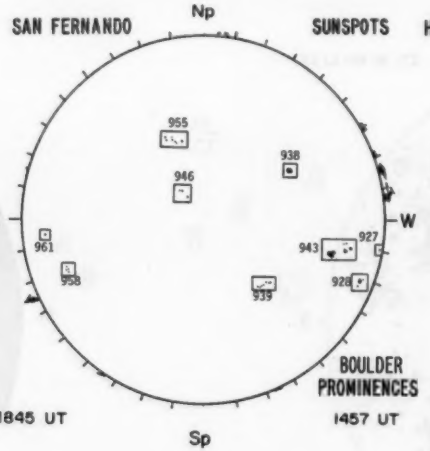
BIG BEAR



Hα

2042 UT

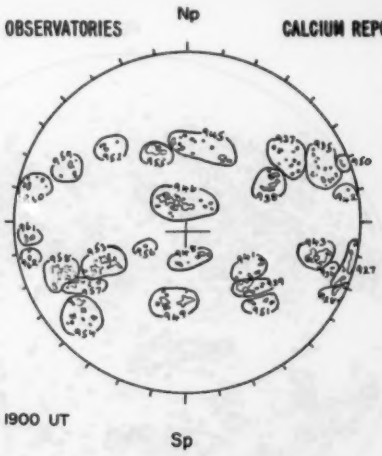
SAN FERNANDO



SUNSPOTS

1845 UT

HALE OBSERVATORIES



CALCIUM REPORT

FAIR	JA
27-	1300-3.5
28-	0400-3.5
35-	0700-3.0
36-	0100-2.5
37-	0600-2.5
38-	0700-3.5
39-	0800-3.5
41-	0300-2.5
43-	1200-3.5
45-	0800-3.0
46-	1400-3.5
48-	0300-3.0
49-	1000-3.5
50-	0200-3.0
51-	0300-2.5
52-	0200-2.5
53-	1100-3.5
54-	0800-3.0
55-	0700-4.0
56-	0100-2.5
57-	0500-3.0
58-	1400-4.0
59-	0400-3.0
60-	0600-2.5
61-	0400-2.5

BOULDER PROMINENCES

1457 UT

1900 UT

NOSC LA POSTA Np 2.0 CM

NO DATA

E SCHEDULE W

---- UT Sp Ant. Temp. Unit 100° K

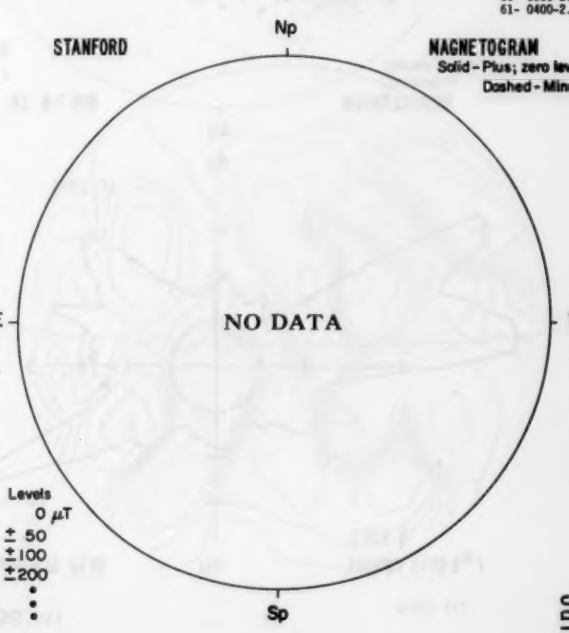
NOSC LA POSTA Np 8.6 MM

NO DATA

E SCHEDULE W

---- UT Sp Ant. Temp. Unit 100° K

STANFORD



MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

Levels

0 μT

± 50

±100

±200

51

Jul 80

JULY 3, 1980 (P=-1.72, B_o=3.14, L_o=36.74)

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å

E

W

1827 UT

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus

E

W

1357 UT

Sp

MT. WILSON

Np

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.7
DELTAX = 9.5

E

W

Levels
± 5
± 10
± 20
± 40
± 80

17.77-19.14 UT

Sp

03

BOULDER

Np

Hα

SAN FERNANDO

Np

SUNSPOTS

HALE OBSERVATORIES

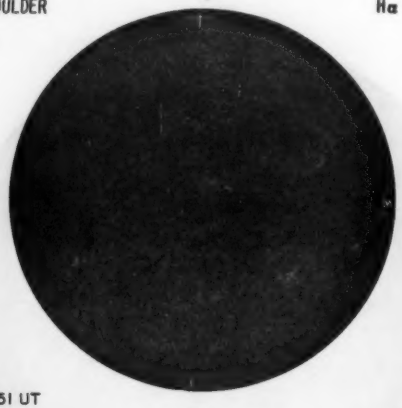
Np

CALCIUM REPORT

03

BOULDER

Np



E W

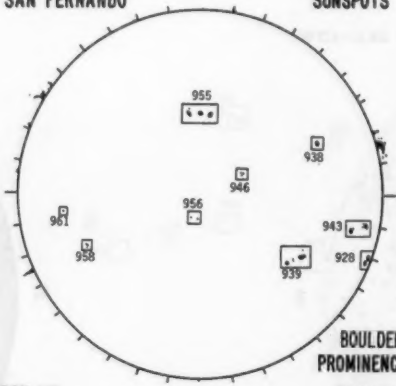
Sp

1551 UT

Hα

SAN FERNANDO

Np



E W

Sp

1525 UT

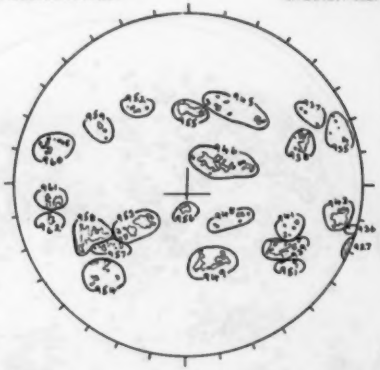
SUNSPOTS

BOULDER PROMINENCES

1551 UT

HALE OBSERVATORIES

Np



E W

Sp

1824 UT

CALCIUM REPORT

GOOD	JA
27- 0500-3.5	
38- 0700-3.5	
39- 1200-3.0	
43- 1200-3.0	
45- 0500-2.5	
46- 1500-3.5	
48- 0300-3.0	
49- 1100-3.0	
53- 1600-3.5	
54- 0700-3.0	
55- 1000-3.5	
56- 0200-3.0	
57- 0400-3.0	
58- 1700-4.0	
59- 0300-2.5	
60- 0700-2.5	
61- 0700-3.0	
62- 0200-3.0	

NOSC LA POSTA

Np

2.0 CM

NO DATA

E SCHEDULE W

---- UT

Sp

Ant. Temp. Unit 100° K

NOSC LA POSTA

Np

8.6 MM

NO DATA

E SCHEDULE W

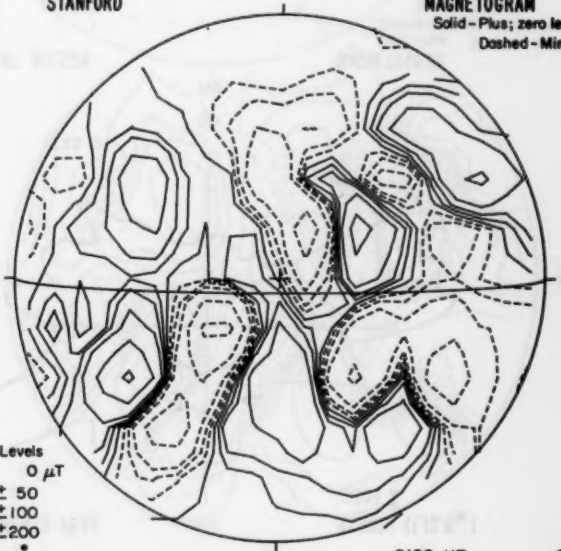
---- UT

Sp

Ant. Temp. Unit 100° K

STANFORD

Np



E W

Sp

2122 UT

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

Levels

0 μT

± 50

±100

±200

•

•

•

JULY 4, 1980 (P=-1.27, B_o = 3.25, L_o = 23.51

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å

E

W

1723 UT

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus

E

W

1352 UT

Sp

MT. WILSON

Np

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.7
DELTAX = 9.4

E

W

Levels
+1 5
+1 10
+1 20
+1 40
+1 80

16.07-17.52 UT

Sp

04

BOULDER

Np

Hα

SAN FERNANDO

Np

SUNSPOTS

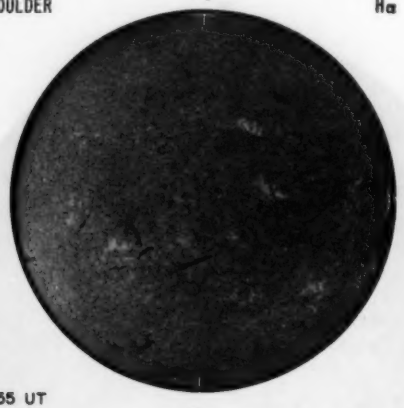
HALE OBSERVATORIES

Np

CALCIUM REPORT

04

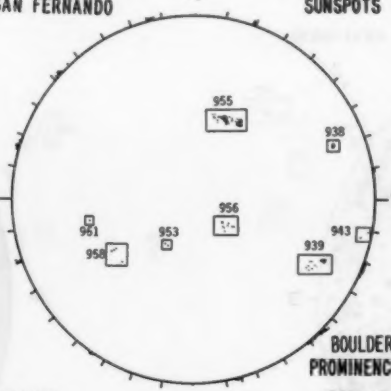
BOULDER Np Hα



E W

1355 UT Sp

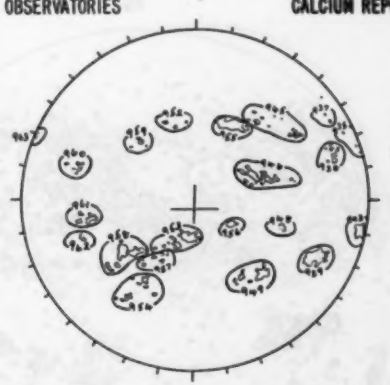
SAN FERNANDO Np



E W

1430 UT Sp

SUNSPOTS HALE OBSERVATORIES Np



E W

1745 UT Sp

BOULDER PROMINENCES

1355 UT

CALCIUM REPORT

	FAIR	JA
35-	0200	2.5
38-	0500	3.0
39-	2000	3.0
43-	1000	3.0
45-	0500	2.5
46-	1300	3.5
48-	0200	3.0
49-	1000	3.0
53-	1200	3.5
54-	0600	3.0
55-	1400	4.0
56-	0300	3.0
57-	0300	2.5
58-	1300	3.5
59-	0205	2.5
60-	0300	2.5
61-	0500	3.0
62-	0200	3.5
63-	0200	3.0

NOSC LA POSTA Np 2.0 CM

NO DATA

E SCHEDULE W

---- UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

E SCHEDULE W

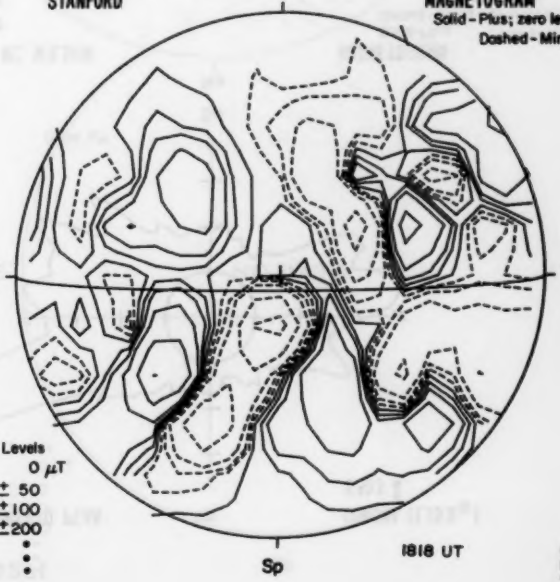
---- UT Sp Ant. Temp. Unit 100° K

STANFORD Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Levels

0 μT

± 50

±100

±200

1818 UT Sp

55

Jul 80

JULY 5, 1980 (P=-0.81, B_o=3.36, L_o=10.27)

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å

E

W

1504 UT

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus

E

W

1351 UT

Sp

MT. WILSON

Np

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.7
DELTAX = 9.4

E

W

Levels
± 5
± 10
± 20
± 40
± 80

16.50-17.87 UT

Sp

05

BIG BEAR

Np

Hα

SAN FERNANDO

Np

SUNSPOTS

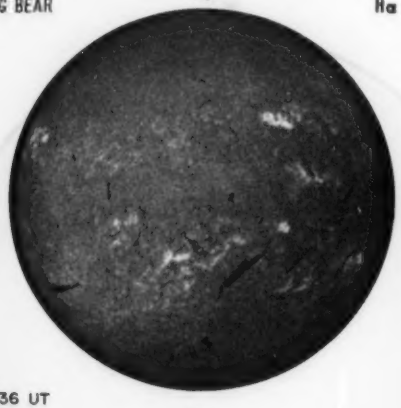
HALE OBSERVATORIES

Np

CALCIUM REPORT

05

BIG BEAR Np Hα

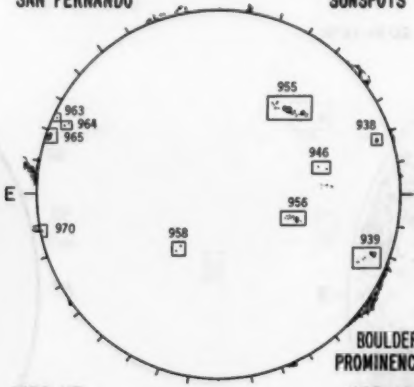


E W

1836 UT

Sp

SAN FERNANDO Np SUNSPOTS



E W

1430 UT

Sp

HALE OBSERVATORIES Np CALCIUM REPORT

E W

1933 UT

Sp

FAIR	JA
38- 0500-3.0	
39- 3000-3.0	
45- 0500-2.5	
46- 1100-3.5	
48- 0100-3.0	
49- 0900-3.0	
52- 0200-2.5	
53- 1000-3.5	
54- 0800-3.0	
55- 1100-4.0	
56- 0500-3.5	
57- 0400-3.0	
58- 1200-3.5	
60- 0400-2.5	
61- 0400-3.0	
62- 0200-3.0	
63- 1200-4.0	
64- 0200-3.5	
65- 1200-4.0	
66- 0300-3.0	
67- 0500-2.5	

BOULDER PROMINENCES

1407 UT

NOSC LA POSTA Np 2.0 CM

NO DATA

E SCHEDULE W

---- UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

E SCHEDULE W

---- UT Sp Ant. Temp. Unit 100° K

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E W

Sp

Levels

0 μT

± 50

±100

±200

57

Jul 80

JULY 6, 1980 (P = -0.36, B_o = 3.46, L_o = 357.04)

SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å
E NO DATA W
Sp

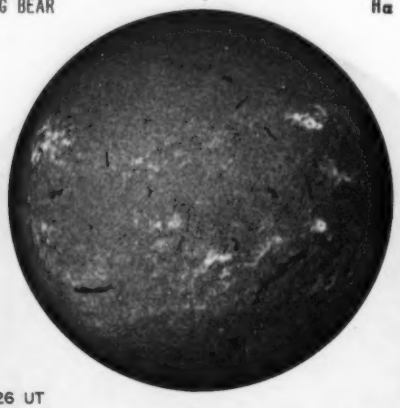
KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus
E NO DATA W
Sp

NT. WILSON Np MAGNETOGRAM
Solid-Plus
Dotted-Minus
DELTAY = 12.7
DELTAX = 9.5
E W
Levels
± 5
± 10
± 20
± 40
± 80
16.61-18.03 UT
Sp

06
BIG BEAR Np Hα
SAN FERNANDO Np SUNSPOTS
HALE OBSERVATORIES Np CALCIUM REPORT

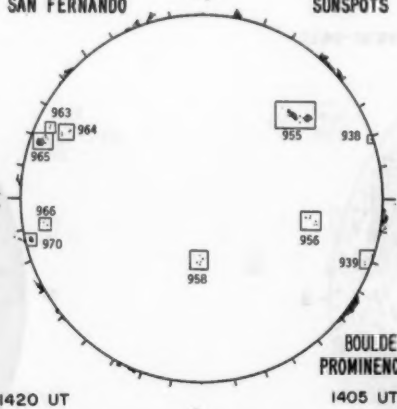
06

BIG BEAR Np Hα



1926 UT

SAN FERNANDO Np SUNSPOTS

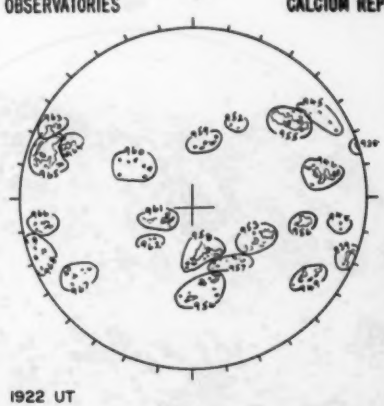


1420 UT

BOULDER PROMINENCES

1405 UT

HALE OBSERVATORIES Np



1922 UT

CALCIUM REPORT

	GOOD	JA
38-	0400-3.0	
39-	0700-3.0	
46-	1300-3.5	
48-	0200-2.5	
49-	0500-3.0	
53-	0900-3.0	
54-	0600-3.0	
55-	1700-3.5	
56-	0700-3.0	
57-	0400-2.5	
58-	0900-3.5	
61-	0400-3.0	
63-	1000-4.0	
64-	0400-3.5	
65-	2500-4.0	
66-	0400-3.0	
67-	0400-2.5	

NOSC LA POSTA Np 2.0 CM

NO DATA

E SCHEDULE W

---- UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

E SCHEDULE W

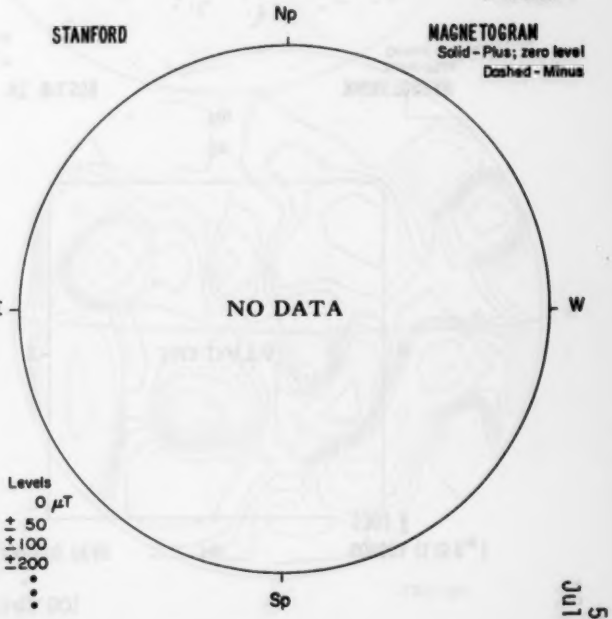
---- UT Sp Ant. Temp. Unit 100° K

STANFORD Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



Levels

0 μT

± 50

±100

±200

59

Jul 80

JULY 7, 1980 (P = 0.10, B_o = 3.57, L_o = 343.80)

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å

E — NO DATA — W

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus

E

W

1602 UT

Sp

MT. WILSON

Np

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.7
DELTAX = 9.4

E

W

Levels
± 5
± 10
± 20
± 40
± 60

17.96-19.34 UT

Sp

07

BOULDER

Np

Hα

SAN FERNANDO

Np

SUNSPOTS

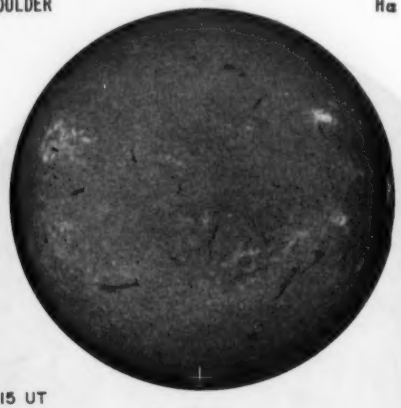
HALE OBSERVATORIES

Np

CALCIUM REPORT

07

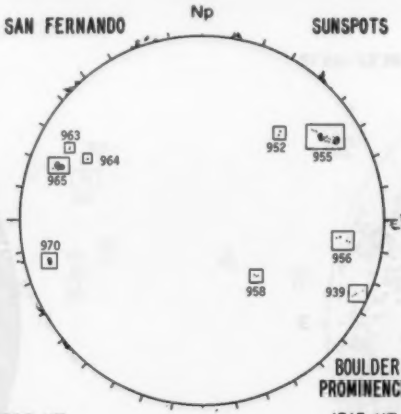
BOULDER



1315 UT

Hα

SAN FERNANDO



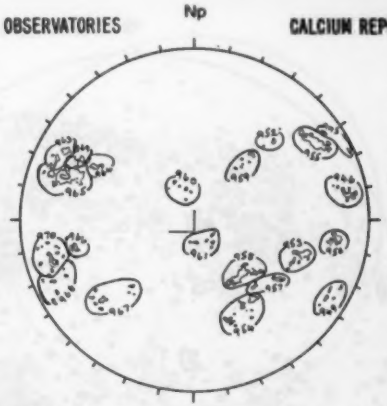
1500 UT

SUNSPOTS

BOULDER PROMINENCES

1315 UT

HALE OBSERVATORIES



1924 UT

CALCIUM REPORT

	GOOD	JA
46-	0700	3.0
49-	0300	2.5
52-	0100	3.0
53-	0700	3.0
54-	0700	3.0
55-	1400	3.5
56-	0600	3.0
57-	0300	3.0
58-	0900	3.0
60-	0200	2.5
61-	0300	2.5
63-	0600	4.0
64-	0300	3.5
65-	2200	4.0
66-	0300	3.0
67-	0500	2.5
68-	0400	3.0
69-	0900	3.5
70-	0900	2.5

NOSC LA POSTA Np 2.0 CM

NO DATA

E EQUIPMENT W

---- UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

E EQUIPMENT W

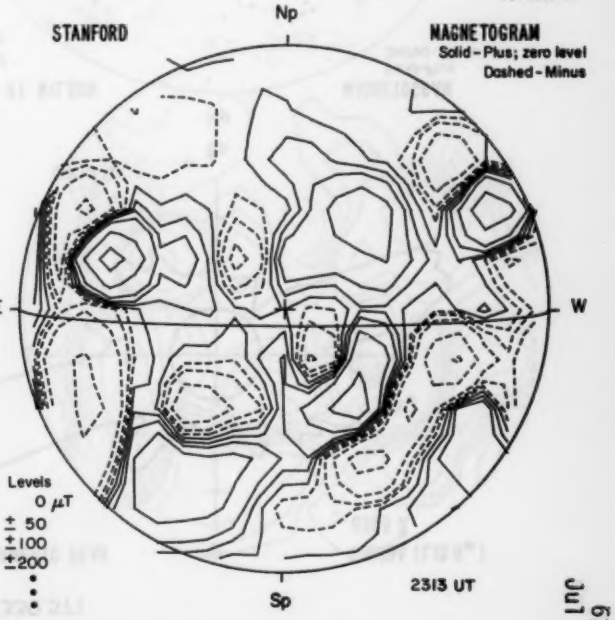
---- UT Sp Ant. Temp. Unit 100° K

STANFORD

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



Levels

0 μT

± 50

± 100

± 200

2313 UT

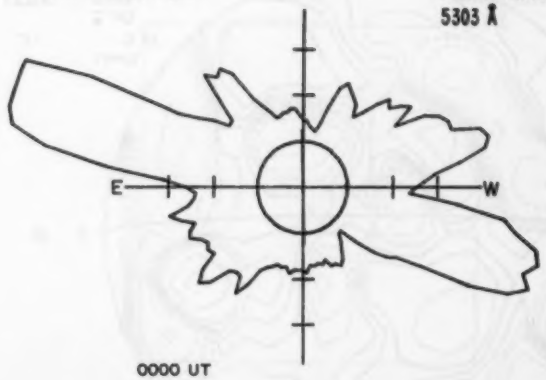
61

Jul 80

JULY 8, 1980 (P = 0.55, B_o = 3.67, L_o = 330.57)

SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å



0000 UT

KITT PEAK

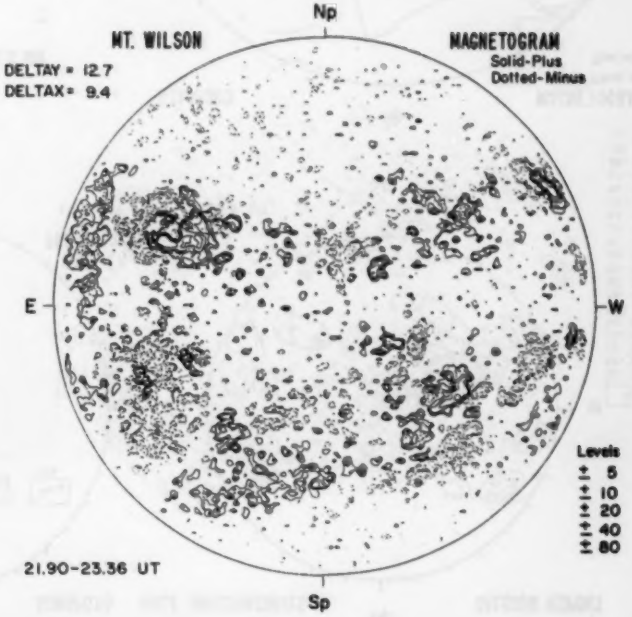
MAGNETOGRAM
Bright - Plus
Dark - Minus

1635 UT

MT. WILSON

DELTAY = 12.7
DELTAX = 9.4

MAGNETOGRAM
Solid - Plus
Dotted - Minus



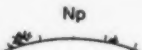
21.90-23.36 UT

08

BIG BEAR

Hα

SAN FERNANDO



SUNSPOTS

HALE OBSERVATORIES

CALCIUM REPORT

08

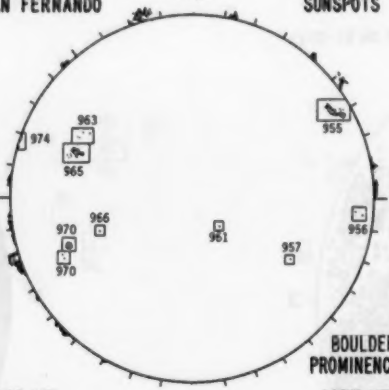
BIG BEAR Np Hα

E W

2043 UT

Sp

SAN FERNANDO Np SUNSPOTS



E W

1500 UT

Sp

BOULDER PROMINENCES

1437 UT

HALE OBSERVATORIES Np CALCIUM REPORT

NO DATA

E W

Sp

NOSC LA POSTA Np 2.0 CM

NO DATA

E EQUIPMENT W

---- UT

Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

E EQUIPMENT W

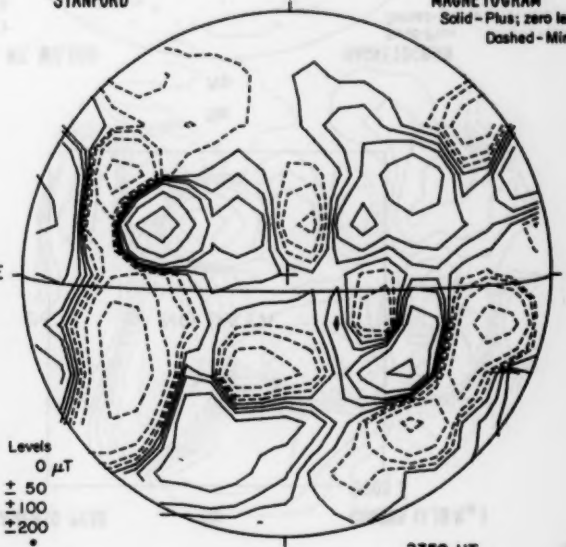
---- UT

Sp Ant. Temp. Unit 100° K

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Levels

0 μT

± 50

±100

±200

2350 UT

Sp

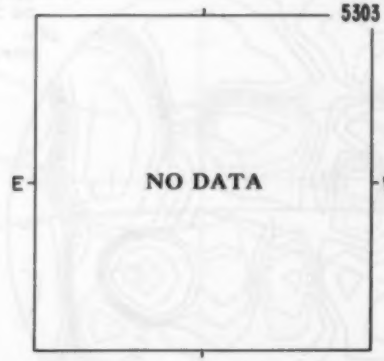
63

Jul 80

JULY 9, 1980 (P = 1.00, B_o = 3.77, L_o = 317.33)

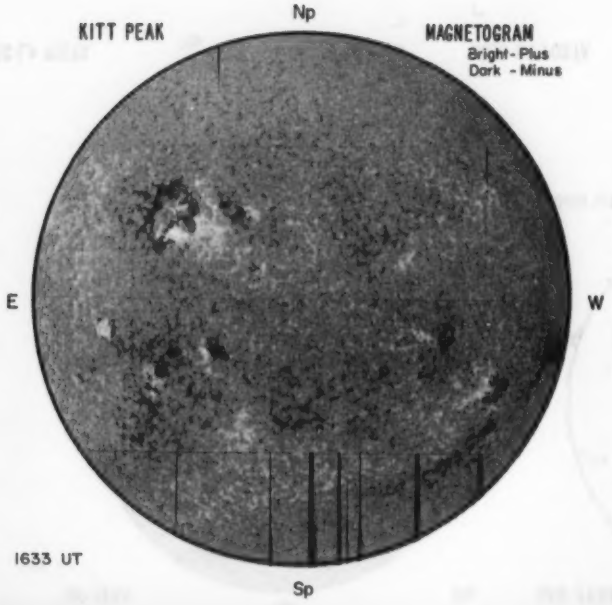
SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å



KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

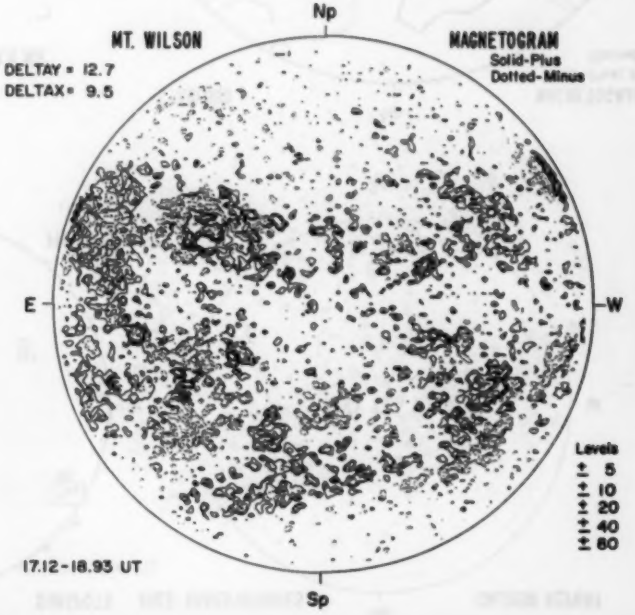


1633 UT

MT. WILSON

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.7
DELTAX = 9.5



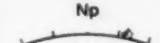
17.12-18.93 UT

09

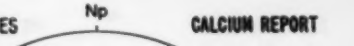
BIG BEAR

Hα

SAN FERNANDO



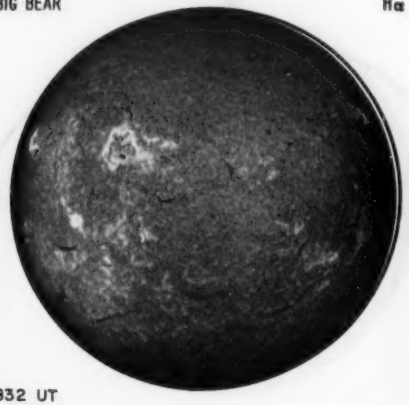
SUNSPOTS HALE OBSERVATORIES



CALCIUM REPORT

09

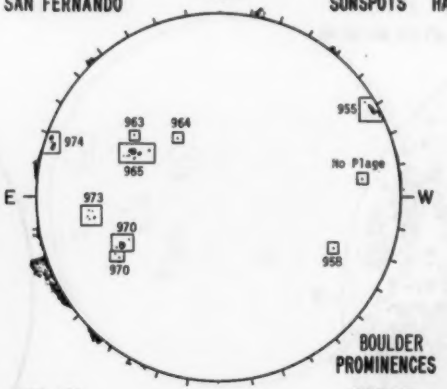
BIG BEAR Np Hα



E W

1832 UT Sp

SAN FERNANDO Np SUNSPOTS



E W

1500 UT Sp

BOULDER PROMINENCES

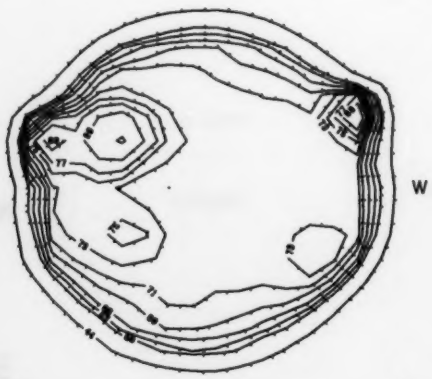
1335 UT

HALE OBSERVATORIES Np CALCIUM REPORT

E W

Sp

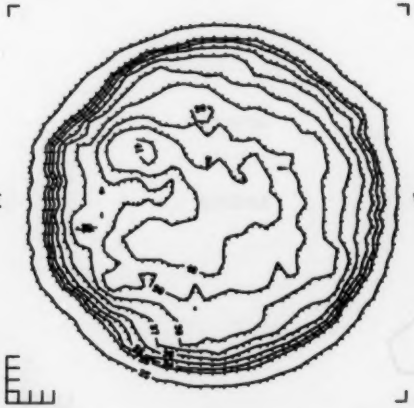
NOSC LA POSTA Np 2.0 CM



E W

1540 UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM



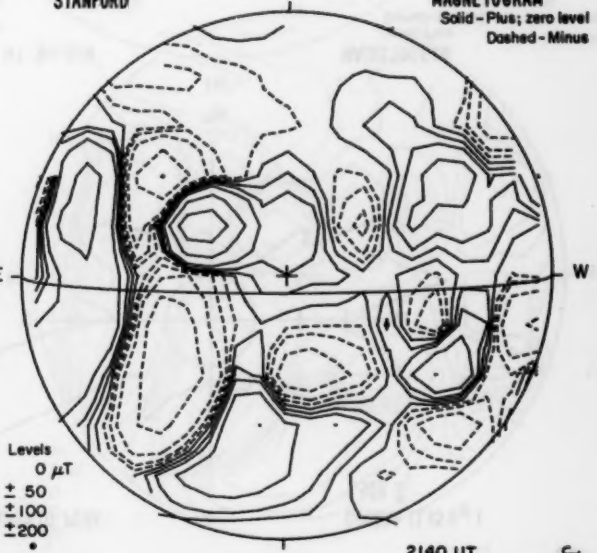
E W

1640 UT Sp Ant. Temp. Unit 100° K

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Levels

0 μT

± 50

±100

±200

2140 UT Sp

65

Jul 80

JULY 10, 1980 (P = 1.45, B_o = 3.88, L_o = 304.10)

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å

E

W

1433 UT

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus

E

NO DATA

W

Sp

MT. WILSON

DELTAY = 12.7
DELTAX = 9.4

Np

MAGNETOGRAM
Solid - Plus
Dotted - Minus

E

W

Levels
5
10
20
40
60

18.03-19.40 UT

Sp

10

BIG BEAR

Np

Hα

SAN FERNANDO

Np

SUNSPOTS

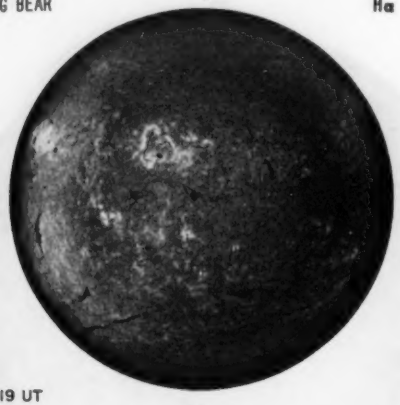
HALE OBSERVATORIES

Np

CALCIUM REPORT

10

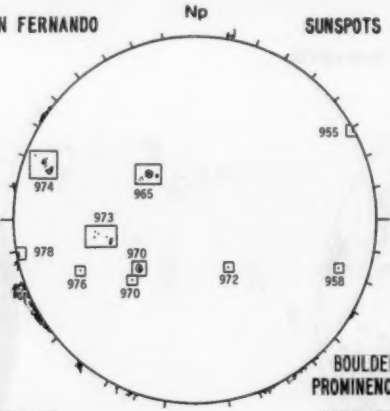
BIG BEAR Np Hα



E W

1819 UT Sp

SAN FERNANDO Np



E W

1705 UT Sp

SUNSPOTS HALE OBSERVATORIES Np

NO DATA

E W

Sp

CALCIUM REPORT

BOULDER PROMINENCES

1435 UT

NOSC LA POSTA Np 2.0 CM

NO DATA

E W

SCHEDULE

---- UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

E W

SCHEDULE

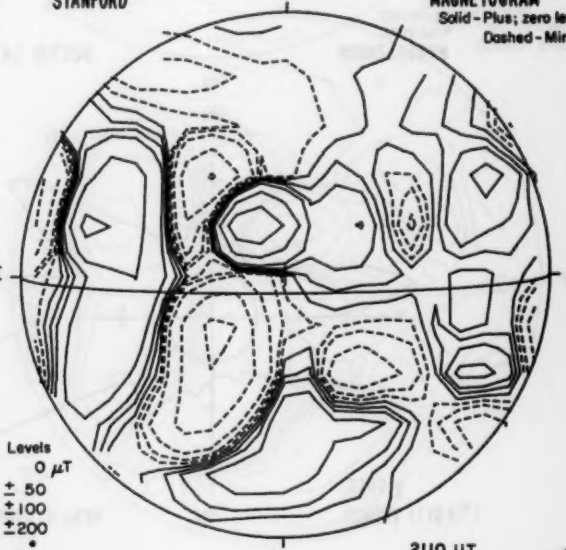
---- UT Sp Ant. Temp. Unit 100° K

STANFORD Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Levels

0 μT

± 50

±100

±200

Sp

2110 UT

67

Jul 80

JULY 11, 1980 (P = 1.90, B_o = 3.98, L_o = 290.86)

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å

E

W

1533 UT

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus

E

W

1412 UT

Sp

MT. WILSON

Np

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.7
DELTAX = 9.5

E

W

Levels
± 5
± 10
± 20
± 40
± 80

18.08 - 19.45 UT

Sp

11

BIG BEAR

Np

Hα

SAN FERNANDO

Np

SUNSPOTS

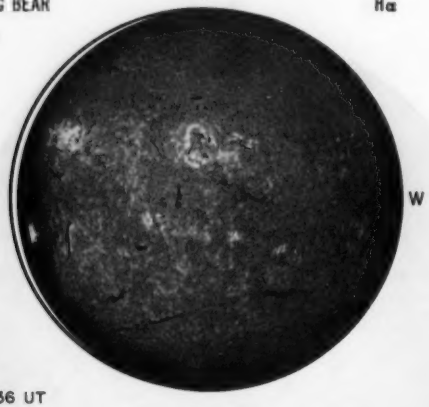
HALE OBSERVATORIES

Np

CALCIUM REPORT

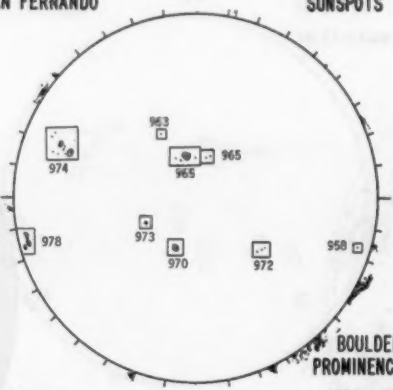
11

BIG BEAR Np Hα



1636 UT Sp

SAN FERNANDO Np SUNSPOTS

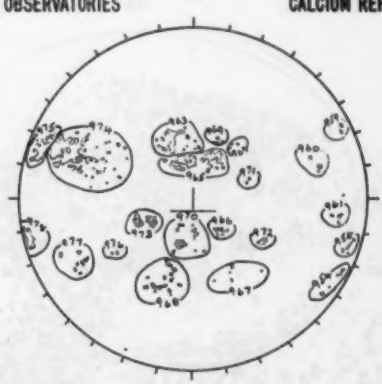


1520 UT Sp

BOULDER PROMINENCES

1632 UT

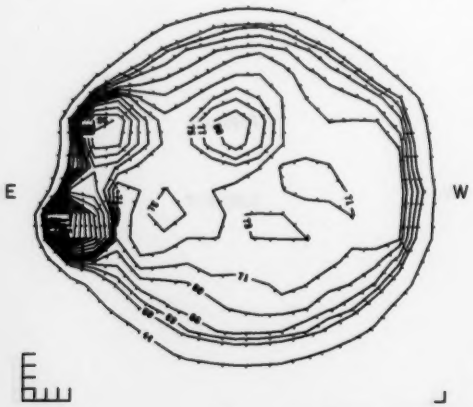
HALE OBSERVATORIES Np CALCIUM REPORT



1652 UT Sp

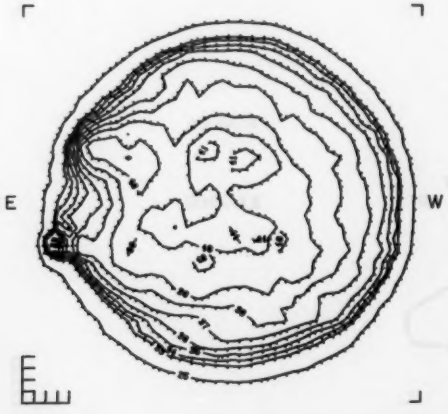
	FAIR	JA
54-	0300	2.5
58-	0300	3.0
60-	0200	3.0
61-	0200	3.0
63-	1100	3.5
64-	0100	3.0
65-	1700	3.5
66-	0400	3.0
67-	0200	2.5
68-	0700	3.0
69-	0100	3.0
70-	0700	3.0
72-	0200	3.0
73-	0600	3.0
74-	5100	4.0
75-	2000	3.5
76-	0100	3.0
77-	0400	3.0
78-	1300	4.5

NOSC LA POSTA Np 2.0 CM



1426 UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

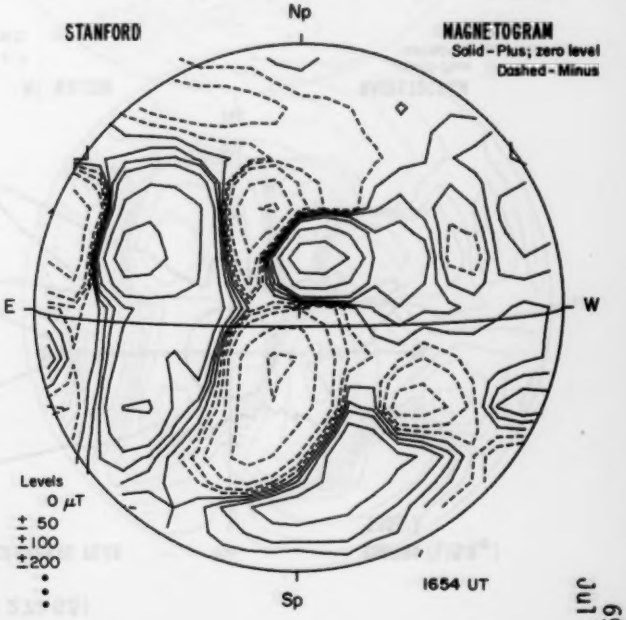


1457 UT Sp Ant. Temp. Unit 100° K

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



1654 UT Sp

69 Jul 80

JULY 12, 1980 (P = 2.35, B_o = 4.08, L_o = 277.63)

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å

E

W

1502 UT

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus

E

W

1535 UT

Sp

MT. WILSON

Np

MAGNETOGRAM
Solid - Plus
Dotted - Minus

DELTAY = 12.7
DELTAX = 9.5

E

W

Levels
± 5
± 10
± 20
± 40
± 80

16.21 - 17.59 UT

Sp

12

BIG BEAR

Np

Hα

SAN FERNANDO

Np

SUNSPOTS

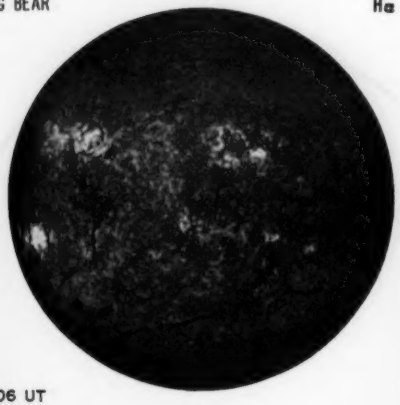
HALE OBSERVATORIES

Np

CALCIUM REPORT

BIG BEAR

Np



E W

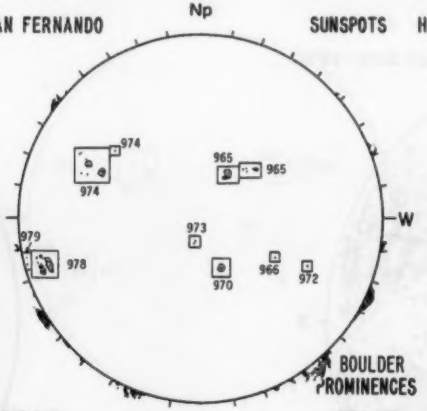
1806 UT

Sp

Hα

SAN FERNANDO

Np



E W

1415 UT

Sp

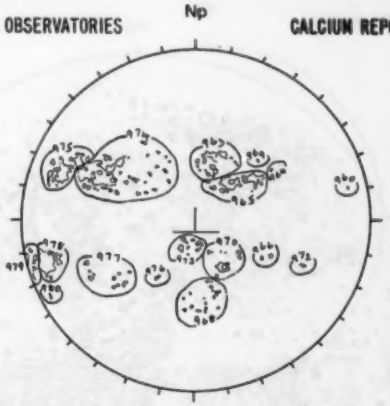
SUNSPOTS

BOULDER PROMINENCES

1621 UT

HALE OBSERVATORIES

Np



E W

1824 UT

Sp

CALCIUM REPORT

FAIR	JA
63-	1300-3.0
64-	0100-3.0
65-	1700-3.0
66-	0200-3.0
68-	0700-3.0
69-	0100-3.0
70-	0700-3.0
72-	0100-3.0
73-	0500-3.0
74-	5000-4.0
75-	3100-3.5
76-	0100-3.0
77-	0600-3.0
78-	3000-5.0
79-	1100-4.0
80-	0100-2.5

NOSC LA POSTA

Np

2.0 CM

NO DATA

E

SCHEDULE

W

---- UT

Sp

Ant. Temp. Unit 100° K

NOSC LA POSTA

Np

8.6 MM

NO DATA

E

SCHEDULE

W

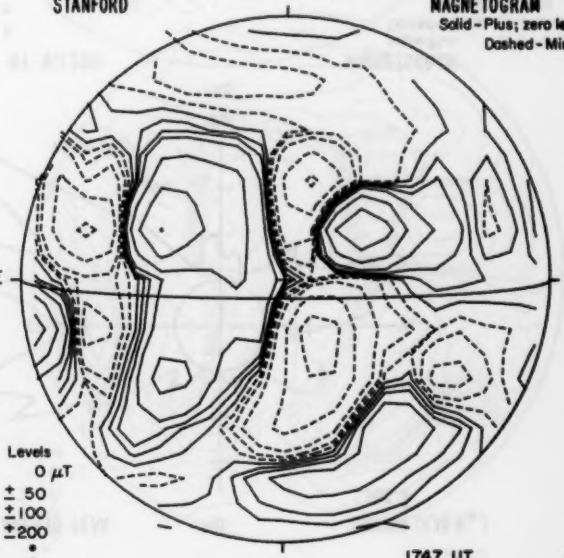
---- UT

Sp

Ant. Temp. Unit 100° K

STANFORD

Np



E W

Levels

0 μT

± 50

±100

±200

Sp

1747 UT

MAGNETOGRAM

Solid - Plus; zero level

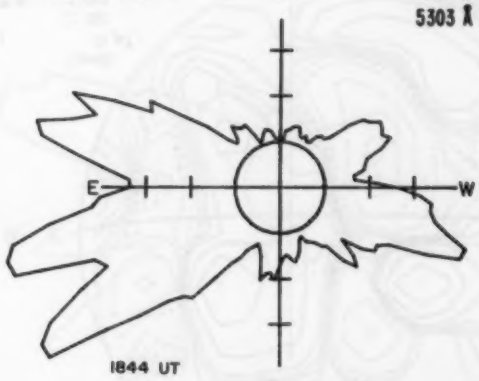
Dashed - Minus

71

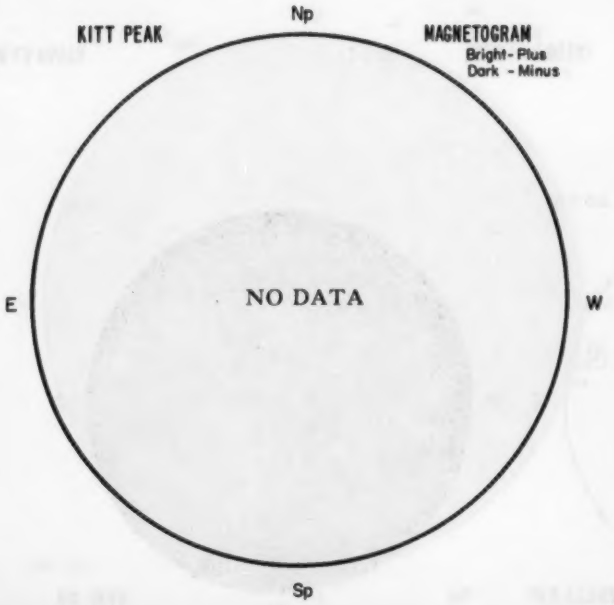
Jul 80

JULY 13, 1980 (P = 2.80, B_o = 4.18, L_o = 264.40)

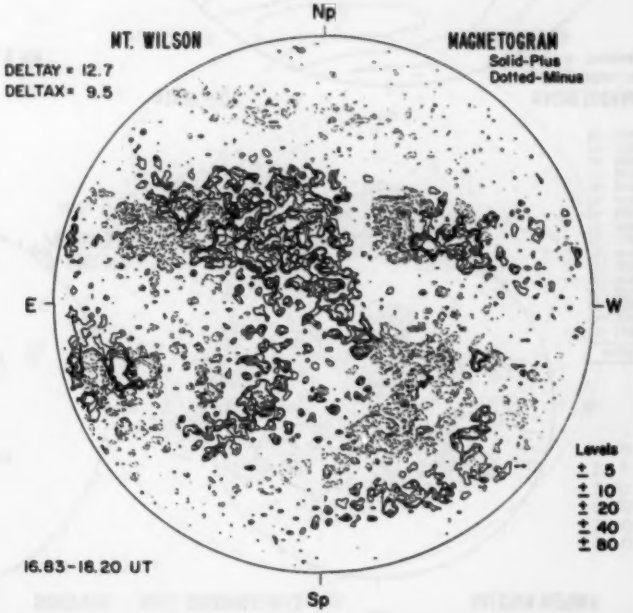
SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å



KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



MT. WILSON Np MAGNETOGRAM
Solid-Plus
Dotted-Minus
DELTAY = 12.7
DELTAX = 9.5



16.83-18.20 UT

13
BOULDER Np Hα BOULDER Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

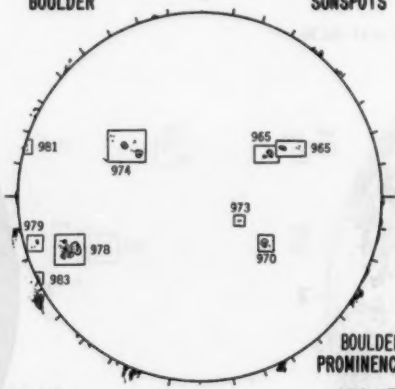
13

BOULDER Np Hα

E W

1444 UT Sp

BOULDER Np SUNSPOTS HALE OBSERVATORIES



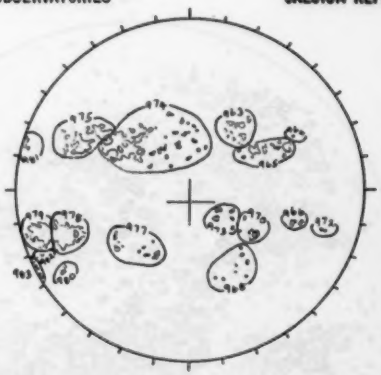
E W

1420 UT Sp

BOULDER PROMINENCES

1444 UT

Np CALCIUM REPORT



E W

1916 UT Sp

FAIR	JA
63-	0800-3.0
64-	0100-3.0
65-	1300-2.5
66-	0300-2.5
68-	0300-2.5
70-	0400-2.5
72-	0100-2.5
73-	0400-3.0
74-	4800-3.5
75-	3300-3.5
77-	0500-3.0
78-	3700-5.0
79-	3300-4.0
80-	0200-3.0
81-	0800-4.0
82-	0200-3.0
83-	0300-2.5

NOSC LA POSTA Np 2.0 CM

NO DATA

E SCHEDULE W

---- UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

E SCHEDULE W

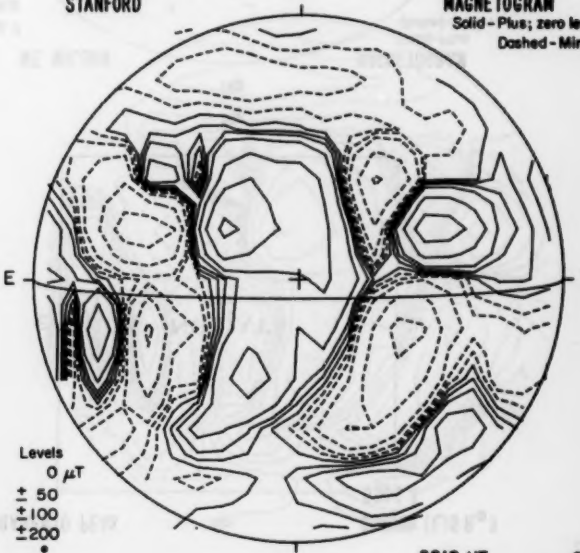
---- UT Sp Ant. Temp. Unit 100° K

STANFORD Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Levels

0 μT

± 50

±100

±200

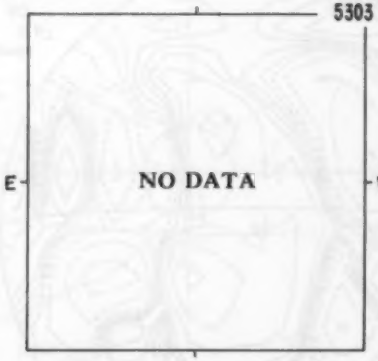
2210 UT Sp

73 Jul 80

JULY 14, 1980 (P = 3.25, B_o = 4.28, L_o = 251.17)

SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å



KITT PEAK

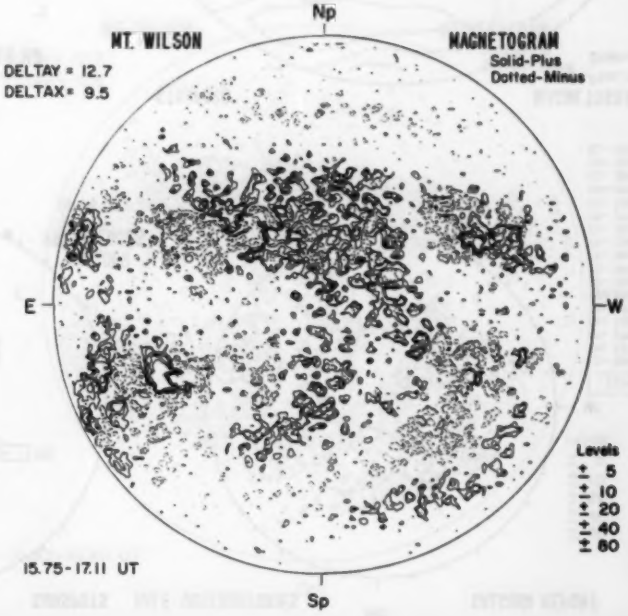
MAGNETOGRAM
Bright - Plus
Dark - Minus

1659 UT

MT. WILSON

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.7
DELTAX = 9.5

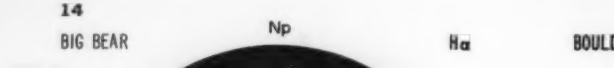


15.75 - 17.11 UT

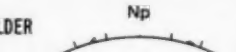
14

BIG BEAR

Hα



BOULDER



SUNSPOTS

HALE OBSERVATORIES

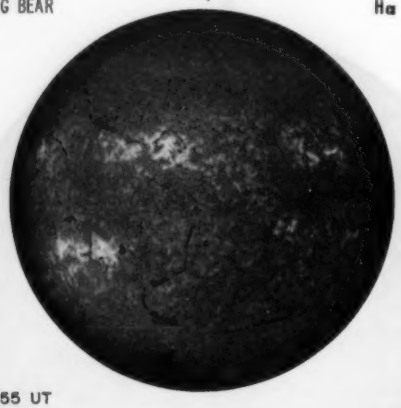
CALCIUM REPORT

14

BIG BEAR

Np

Hα



E W

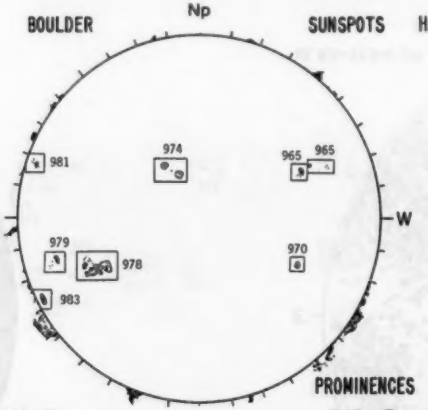
Sp

1855 UT

BOULDER

Np

SUNSPOTS



E W

Sp

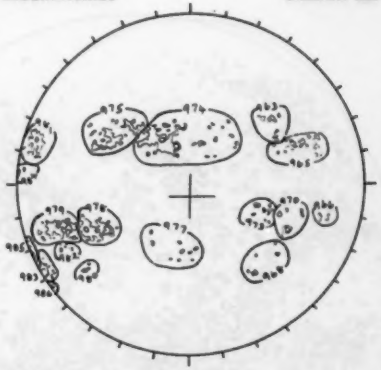
1415 UT

PROMINENCES

1345 UT

HALE OBSERVATORIES

Np



E W

Sp

1731 UT

CALCIUM REPORT

FAIR	JA
63- 0600-3.0	
65- 1100-3.0	
66- 0400-2.5	
68- 0300-2.5	
73- 0400-2.5	
74- 3700-3.5	
75- 2600-3.5	
77- 0400-2.5	
78- 2000-4.5	
79- 2500-3.5	
80- 0200-3.0	
81- 2500-3.5	
82- 0300-3.0	
83- 1600-3.5	
84- 0300-2.5	
86- 0300-3.0	

NOSC LA POSTA

Np

2.0 CM

NO DATA

E EQUIPMENT W

---- UT

Sp Ant. Temp. Unit 100° K

NOSC LA POSTA

Np

8.6 MM

NO DATA

E EQUIPMENT W

---- UT

Sp Ant. Temp. Unit 100° K

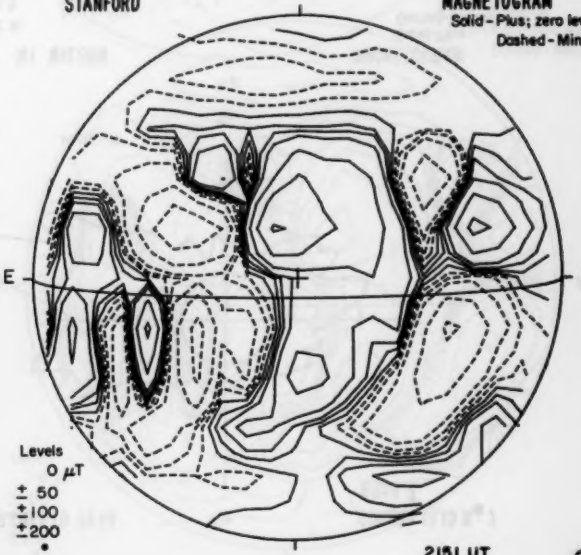
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Levels

0 μT

± 50

±100

±200

Sp

2151 UT

75

Jul 80

JULY 15, 1980 (P = 3.69, B_o = 4.37, L_o = 237.93)

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å

E

W

1418 UT

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus

E

W

1518 UT

Sp

MT. WILSON

Np

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.6
DELTAX = 9.5

E

W

Levels
± 5
± 10
± 20
± 40
± 80

16.36-17.94 UT

Sp

15

BOULDER

Np

Hα

BOULDER

Np

SUNSPOTS

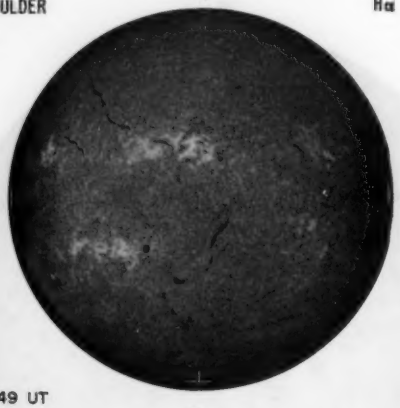
HALE OBSERVATORIES

Np

CALCIUM REPORT

15

BOULDER Np Hα

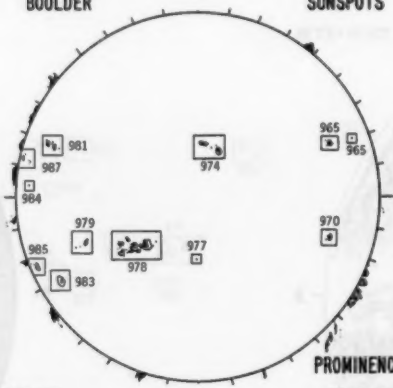


E W

1449 UT

Sp

BOULDER Np SUNSPOTS

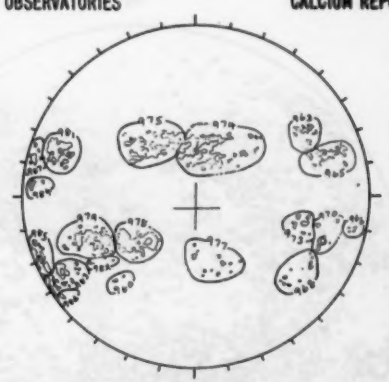


E W

1540 UT

Sp

HALE OBSERVATORIES Np CALCIUM REPORT



E W

1709 UT

Sp

FAIR	JA
63- 1000-3.0	
65- 1800-3.0	
70- 0600-2.5	
73- 0600-2.5	
74- 3700-3.5	
75- 2700-3.5	
77- 0600-2.5	
78- 2700-4.0	
79- 2000-4.0	
80- 0200-3.0	
81- 3300-4.0	
82- 0200-3.0	
83- 1800-3.5	
84- 0500-3.0	
85- 1600-4.0	
86- 0300-3.0	
87- 0800-3.5	

PROMINENCES

1449 UT

NOSC LA POSTA Np 2.0 CM

NO DATA

E EQUIPMENT W

---- UT

Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

E EQUIPMENT W

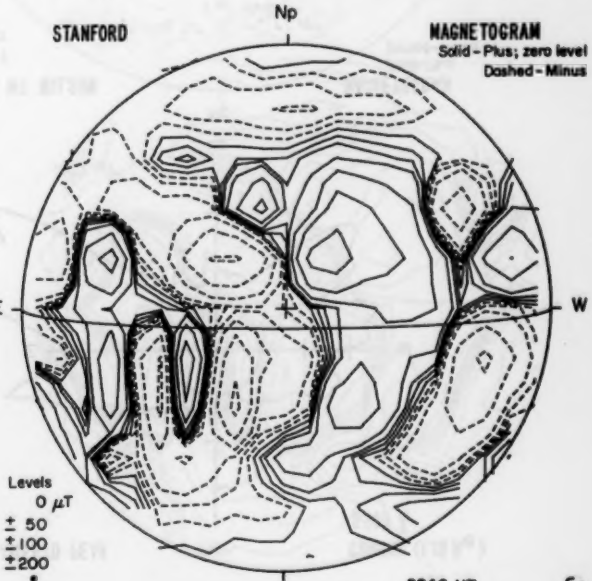
---- UT

Sp Ant. Temp. Unit 100° K

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Levels 0 μT

± 50

±100

±200

2246 UT

Sp

77 Jul 80

JULY 16, 1980 (P=4.14, B_o=4.47, L_o=224.70)

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å

E

W

1527 UT

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright-Plus
Dark - Minus

E

W

1745 UT

Sp

MT. WILSON

Np

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.7
DELTAX = 9.7

E

W

Levels
± 5
± 10
± 20
± 40
± 80

18.23-19.33 UT

Sp

16

BOULDER

Np

Hα

BOULDER

Np

SUNSPOTS

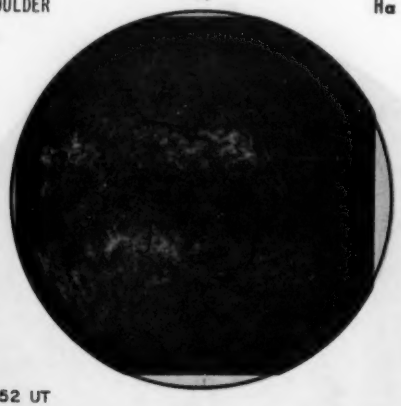
HALE OBSERVATORIES

Np

CALCIUM REPORT

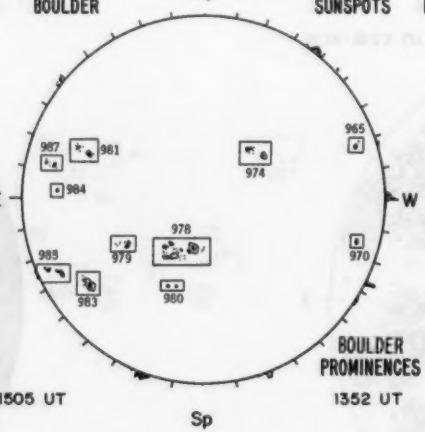
16

BOULDER Np Hα



1352 UT

BOULDER Np SUNSPOTS

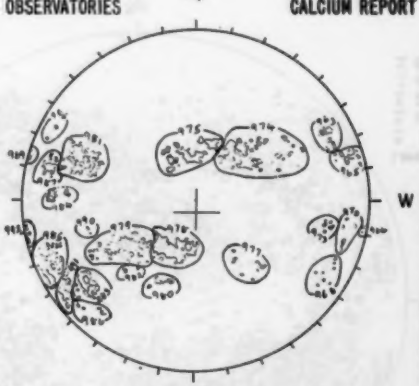


1505 UT

BOULDER PROMINENCES

1352 UT

HALE OBSERVATORIES Np CALCIUM REPORT



1637 UT

	FAIR	JA
63-	0900	3.0
65-	1200	3.0
66-	0200	2.5
74-	3400	3.5
75-	2300	3.5
77-	0500	2.5
78-	3000	4.0
79-	2600	4.0
80-	0400	3.0
81-	3400	4.0
82-	0200	3.0
83-	1500	4.0
84-	0600	3.0
85-	3500	3.5
86-	0300	2.5
87-	1100	4.0
88-	0200	3.0
89-	0500	3.5
90-	0100	2.5
91-	1200	3.5

NOSC LA POSTA Np 2.0 CM

NO DATA

E EQUIPMENT W

---- UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

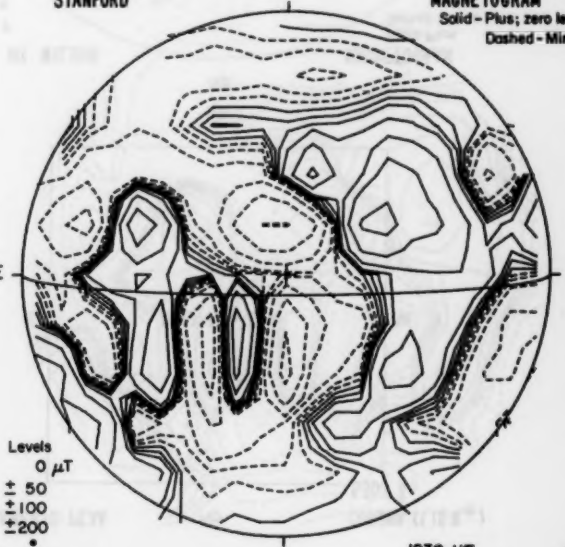
E EQUIPMENT W

---- UT Sp Ant. Temp. Unit 100° K

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



Levels

0 μT

± 50

±100

±200

1930 UT

79 Jul 80

JULY 17, 1980 (P = 4.58, B_o = 4.56, L_o = 211.47)

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å

E — NO DATA — W

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus

E

W

1549 UT

Sp

MT. WILSON

Np

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.7
DELTAX = 9.4

E

W

Levels
± 5
± 10
± 20
± 40
± 80

18.19 - 19.55 UT

Sp

17

BOULDER

Np

Hα

SAN FERNANDO

Np

SUNSPOTS

HALE OBSERVATORIES

Np

CALCIUM REPORT

BOULDER

Np

E W

Sp

1415 UT

Hα

SAN FERNANDO

Np

989 987 981 984 974 965 992 978 979 970 985 983 980

E W

Sp

1505 UT

SUNSPOTS

BOULDER PROMINENCES

1415 UT

HALE OBSERVATORIES

Np

E W

Sp

1704 UT

CALCIUM REPORT

	GOOD	JA
63-	1000-3.0	
65-	0300-3.0	
68-	0400-2.5	
73-	0400-2.5	
74-	3600-3.5	
75-	2300-3.5	
77-	0500-3.0	
78-	3000-4.0	
79-	3100-3.5	
80-	0400-3.0	
81-	3200-4.0	
82-	0200-2.5	
83-	1800-4.0	
84-	0600-3.5	
85-	3800-4.0	
86-	0300-2.5	
87-	2100-4.0	
88-	0500-3.5	
89-	0700-4.0	
91-	1500-3.5	
92-	0300-3.0	
94-	0500-3.0	

NOSC LA POSTA

Np

2.0 CM

NO DATA

E EQUIPMENT W

---- UT

Sp Ant. Temp. Unit 100° K

NOSC LA POSTA

Np

8.6 MM

NO DATA

E EQUIPMENT W

---- UT

Sp Ant. Temp. Unit 100° K

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E W

Levels

0 μT

± 50

±100

±200

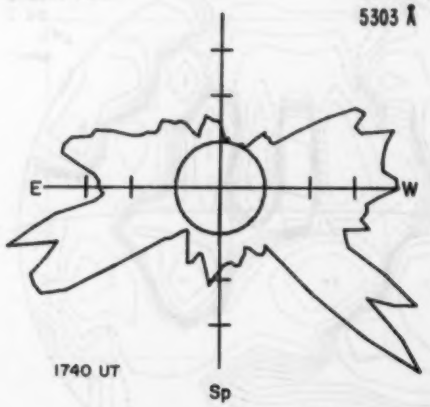
Sp

1917 UT

JULY 18, 1980 (P = 5.02, B_o = 4.66, L_o = 198.24)

SACRAMENTO PEAK

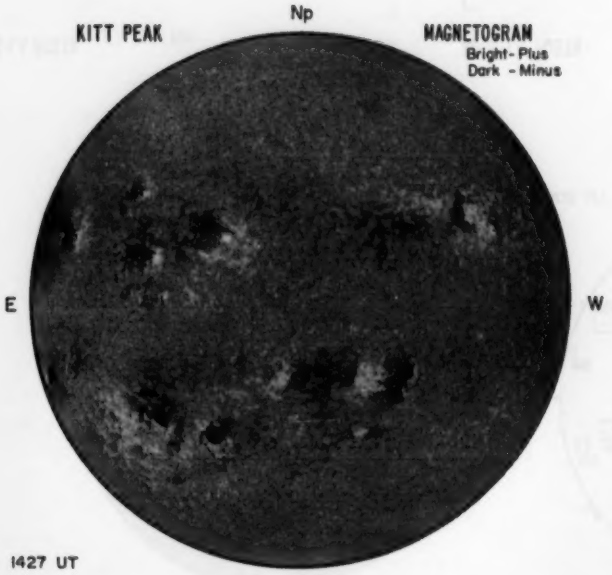
CORONA (1.15 $R_\odot$)
5303 Å



1740 UT

KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

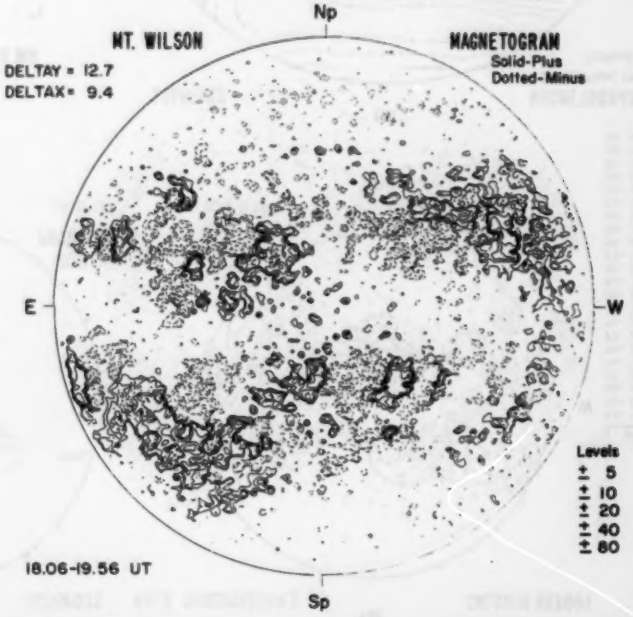


1427 UT

MT. WILSON

DELTAY = 12.7
DELTAX = 9.4

MAGNETOGRAM
Solid-Plus
Dotted-Minus

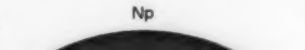


18.06-19.56 UT

18

BIG BEAR

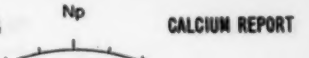
Hα



BOULDER

SUNSPOTS

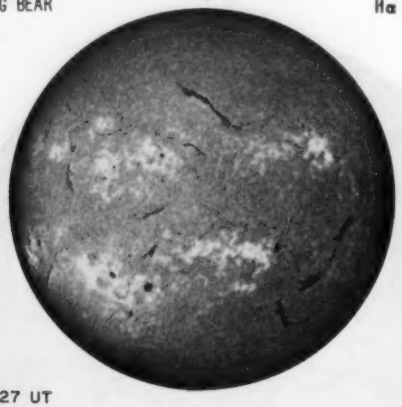
HALE OBSERVATORIES



CALCIUM REPORT

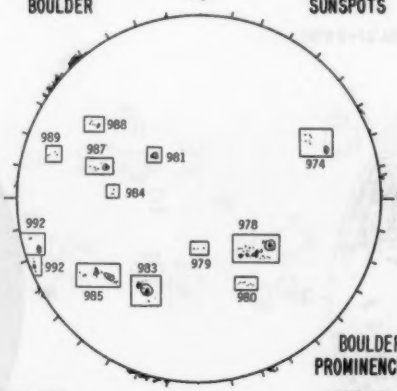
18

BIG BEAR Np Hα



1827 UT

BOULDER Np SUNSPOTS

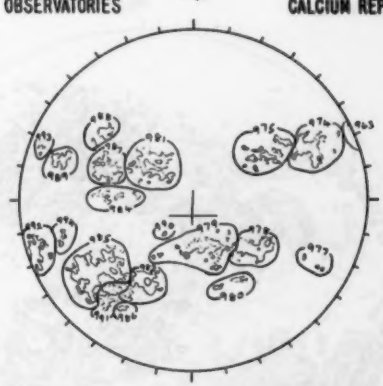


1600 UT

BOULDER PROMINENCES

1359 UT

HALE OBSERVATORIES Np CALCIUM REPORT



2145 UT

	GOOD	JA
63-	0500	2.5
74-	1700	3.0
75-	2000	3.0
77-	0300	2.5
78-	2500	3.5
79-	2700	3.5
80-	0500	3.0
81-	3300	3.5
83-	2400	4.0
84-	1000	3.0
85-	7000	4.0
86-	0300	3.0
87-	2300	4.0
88-	1100	3.5
89-	1600	4.0
90-	0100	3.0
91-	1800	3.5
92-	2500	3.5
93-	0300	2.5
94-	0400	3.0

NOSC LA POSTA Np 2.0 CM

NO DATA

E EQUIPMENT W

---- UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

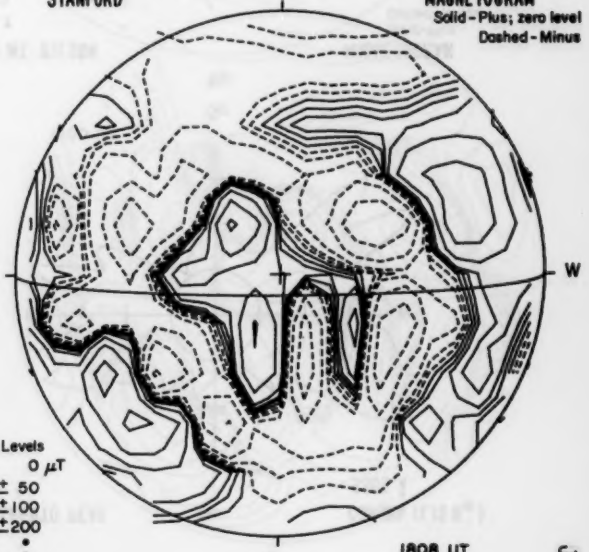
NO DATA

E EQUIPMENT W

---- UT Sp Ant. Temp. Unit 100° K

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus



1808 UT

Levels
0 μT
± 50
±100
±200

83
Jul 80

JULY 19, 1980 (P = 5.45, B_o = 4.75, L_o = 185.01)

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å

E

W

1620 UT

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus

E

W

1437 UT

Sp

MT. WILSON

Np

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.7
DELTAX = 9.5

E

W

Levels
± 5
± 10
± 20
± 40
± 80

16.42-17.79 UT

Sp

19

BOULDER

Np

Hα

BOULDER

Np

SUNSPOTS

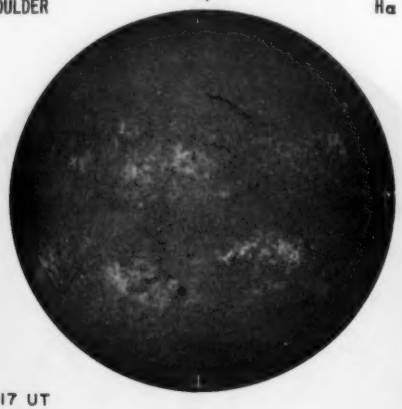
HALE OBSERVATORIES

Np

CALCIUM REPORT

19

BOULDER Np Hα

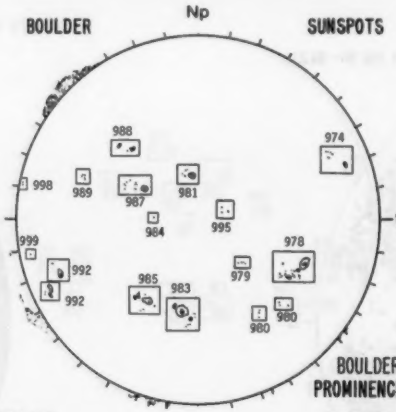


E W

1717 UT

Sp

BOULDER Np SUNSPOTS



E W

1615 UT

Sp

BOULDER PROMINENCES

1717 UT

HALE OBSERVATORIES Np

E W

1913 UT

Sp

CALCIUM REPORT

	GOOD	JA
74-	3100	3.0
75-	1800	3.0
78-	3200	3.0
79-	2500	3.0
80-	0500	3.0
81-	2500	3.5
83-	1800	3.5
84-	0400	3.0
85-	7100	3.5
86-	0200	3.0
87-	2200	3.5
88-	1000	3.5
89-	1500	4.0
91-	1400	3.5
92-	5200	4.0
93-	0600	2.5
94-	0400	3.5
95-	0200	3.0
96-	0300	3.0
98-	0600	3.0
99-	0600	2.5

NOSC LA POSTA Np 2.0 CM

NO DATA

E SCHEDULE W

---- UT

Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

E SCHEDULE W

---- UT

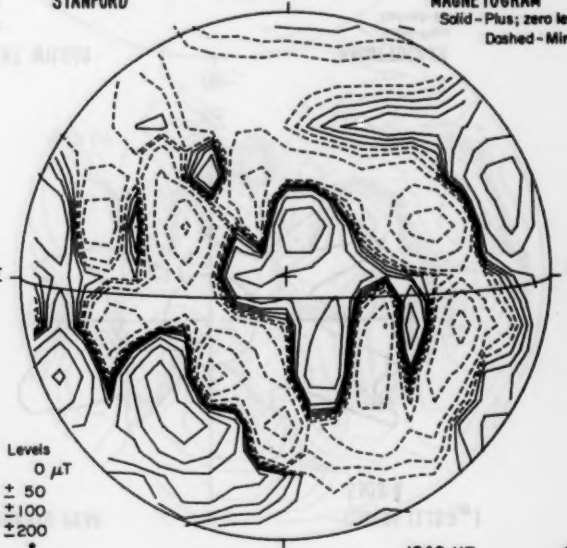
Sp Ant. Temp. Unit 100° K

STANFORD Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Levels

0 μT

± 50

±100

±200

1842 UT

Sp

85

Jul 80

JULY 20, 1980 (P = 5.89, B_o = 4.84, L_o = 171.77)

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å

E

W

1627 UT

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus

E

W

1434 UT

Sp

MT. WILSON

Np

MAGNETOGRAM
Solid - Plus
Dotted - Minus

DELTAY = 12.7
DELTAX = 9.4

E

W

Levels
± 5
± 10
± 20
± 40
± 80

17.19 - 18.56 UT

Sp

20

BOULDER

Np

Hα

SAN FERNANDO

Np

SUNSPOTS

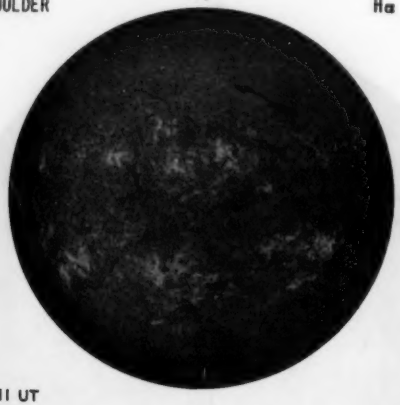
HALE OBSERVATORIES

Np

CALCIUM REPORT

20

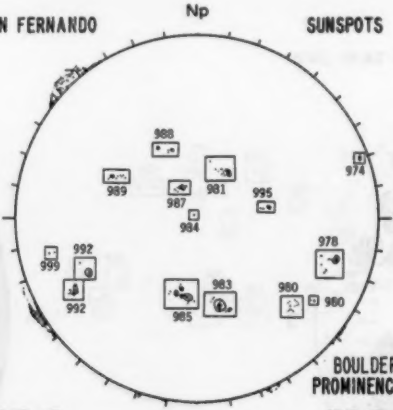
BOULDER



1311 UT

Hα

SAN FERNANDO



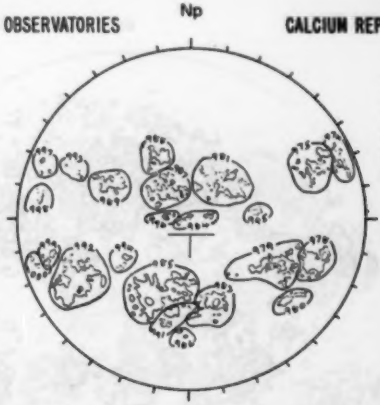
1645 UT

SUNSPOTS

BOULDER PROMINENCES

1311 UT

HALE OBSERVATORIES



1801 UT

CALCIUM REPORT

	GOOD	JA
74-	1600-	3.5
75-	2000-	3.0
78-	3000-	3.5
79-	2300-	3.0
80-	0900-	3.0
81-	2200-	3.5
83-	1500-	3.0
84-	0400-	3.0
85-	6400-	3.5
86-	0200-	2.5
87-	2000-	3.5
88-	1300-	3.5
89-	1700-	3.5
91-	1200-	3.5
92-	6600-	4.0
94-	0400-	3.0
95-	0300-	3.5
97-	0300-	2.5
98-	0500-	3.5
99-	0700-	3.0
00-	0300-	2.5

NOSC LA POSTA

Np

2.0 CM

NO DATA

E

SCHEDULE

W

---- UT

Sp

Ant. Temp. Unit 100° K

NOSC LA POSTA

Np

8.6 MM

NO DATA

E

SCHEDULE

W

---- UT

Sp

Ant. Temp. Unit 100° K

STANFORD

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

Levels

0 μT

± 50

±100

±200

2115 UT

87

Jul 80

JULY 21, 1980 (P = 6.32, B_o = 4.93, L_o = 158.54)

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å

E

NO DATA

W

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus

E

W

1544 UT

Sp

MT. WILSON

Np

MAGNETOGRAM
Solid - Plus
Dotted - Minus

DELTAY = 12.7
DELTAX = 9.8

E

W

Levels
± 5
± 10
± 20
± 40
± 80

18.97 - 19.92 UT

Sp

21

BOULDER

Np

Hα

BOULDER

Np

SUNSPOTS

HALE OBSERVATORIES

Np

CALCIUM REPORT

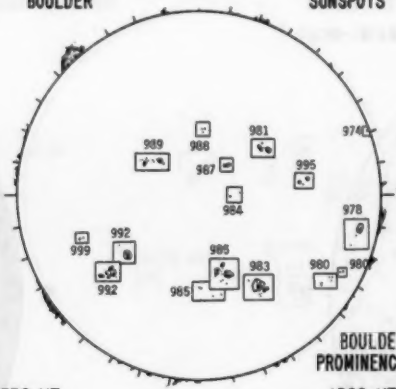
21

BOULDER Np Hα

E W

1806 UT Sp

BOULDER Np SUNSPOTS



E W

1530 UT Sp

HALE OBSERVATORIES Np CALCIUM REPORT

E W

1806 UT 2223 UT Sp

GOOD	JA
75-	1600-3.0
78-	2300-3.5
79-	2100-3.0
80-	0700-3.0
81-	2200-3.5
83-	1500-3.5
84-	0300-3.0
85-	0000-4.0
87-	1700-3.5
88-	1400-3.5
89-	1600-3.5
91-	0300-3.0
92-	0500-4.0
93-	0300-2.5
94-	0500-3.0
95-	0300-3.0
96-	0100-3.0
97-	0600-2.5
98-	0600-3.0
99-	0500-3.0
00-	0200-3.0
01-	0200-3.0
02-	0300-2.5

BOULDER PROMINENCES

NOSC LA POSTA Np 2.0 CM

NO DATA

E EQUIPMENT W

---- UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

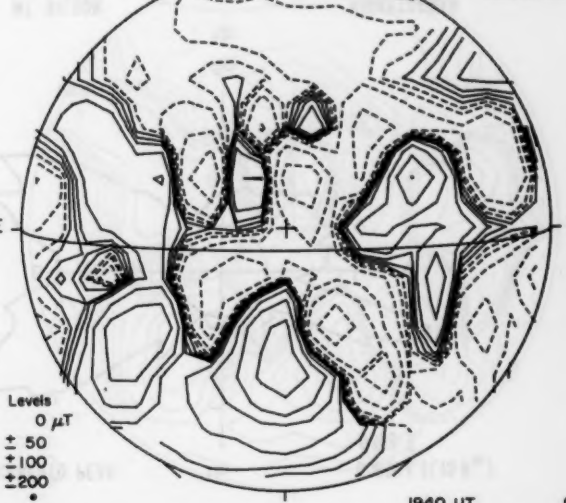
E EQUIPMENT W

---- UT Sp Ant. Temp. Unit 100° K

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Levels

0 μT

± 50

±100

±200

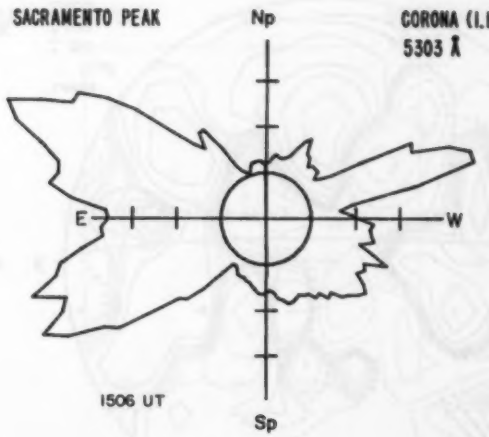
1940 UT Sp

89

Jul 80

JULY 22, 1980 (P = 6.75, B_o = 5.02, L_o = 145.31)

SACRAMENTO PEAK



CORONA (1.15 $R_\odot$)
5303 Å

1506 UT

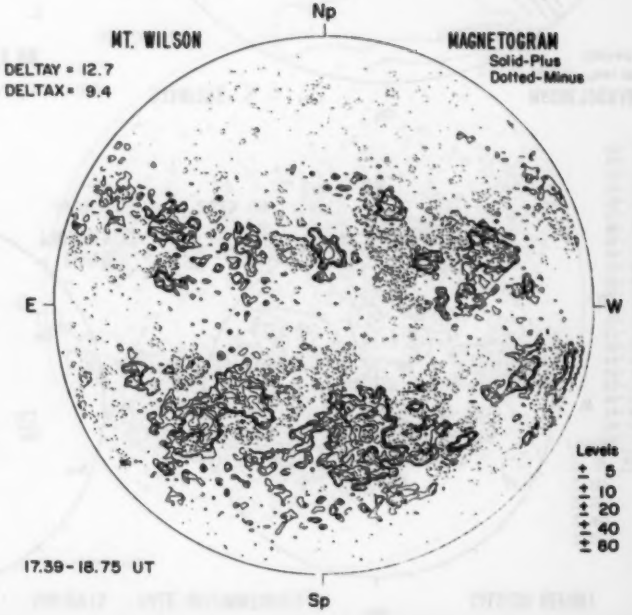
KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

1642 UT

MT. WILSON

DELTAY = 12.7
DELTAX = 9.4



MAGNETOGRAM
Solid-Plus
Dotted-Minus

17.39 - 18.75 UT

22

BOULDER

Hα

SAN FERNANDO

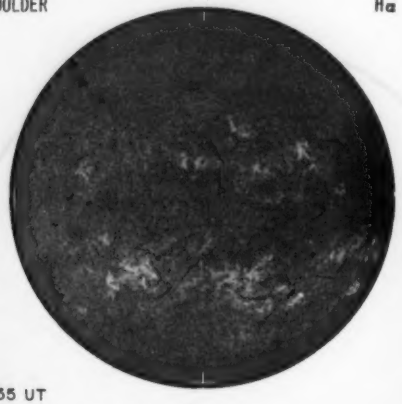
SUNSPOTS

HALE OBSERVATORIES

CALCIUM REPORT

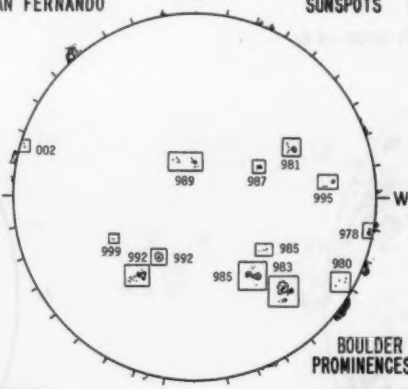
22

BOULDER Np Hα



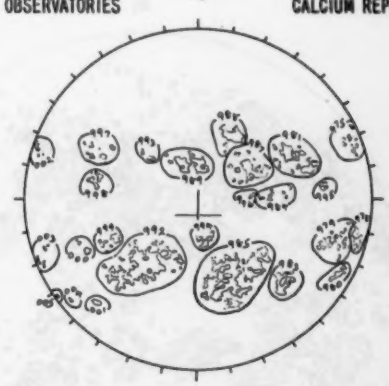
1355 UT

SAN FERNANDO Np



1500 UT

SUNSPOTS HALE OBSERVATORIES Np



BOULDER PROMINENCES

1355 UT 1627 UT

CALCIUM REPORT

	GOOD	JA
75-	0600	3.0
78-	1300	3.0
79-	1300	3.0
80-	0700	3.0
81-	2200	3.5
83-	1000	3.0
84-	0500	3.0
85-	6200	3.5
87-	1600	3.5
88-	1200	3.5
89-	1400	3.5
92-	6300	4.0
93-	0200	2.5
94-	0500	3.0
95-	0300	3.0
96-	0100	2.5
97-	0500	2.5
98-	0500	3.0
99-	0500	3.0
00-	0400	2.5
01-	0200	3.0
02-	0400	3.0
03-	0400	2.5
04-	0100	2.5
05-	0100	3.0

NOSC LA POSTA Np 2.0 CM

NO DATA

E EQUIPMENT W

---- UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

E EQUIPMENT W

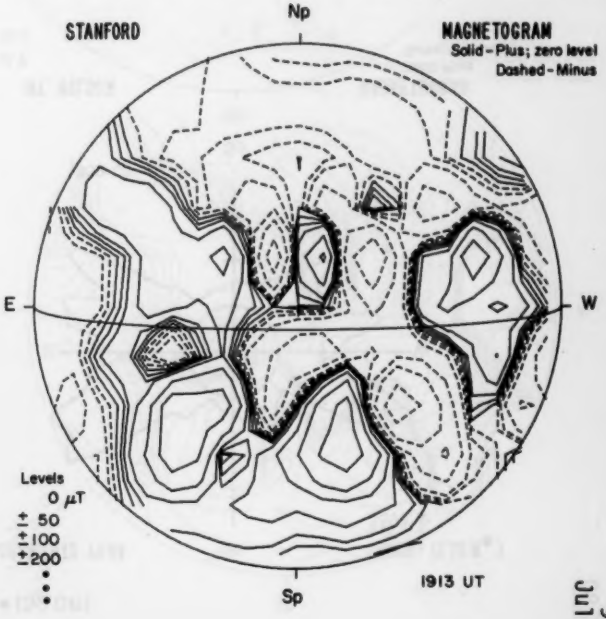
---- UT Sp Ant. Temp. Unit 100° K

STANFORD Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



Levels

0 μT

± 50

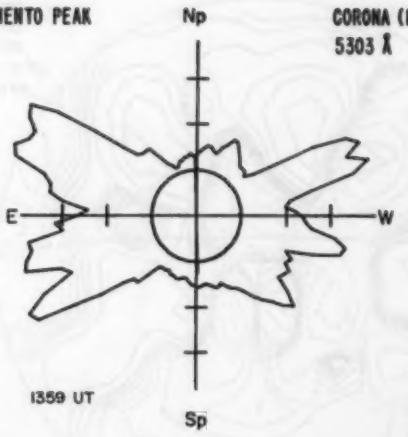
±100

±200

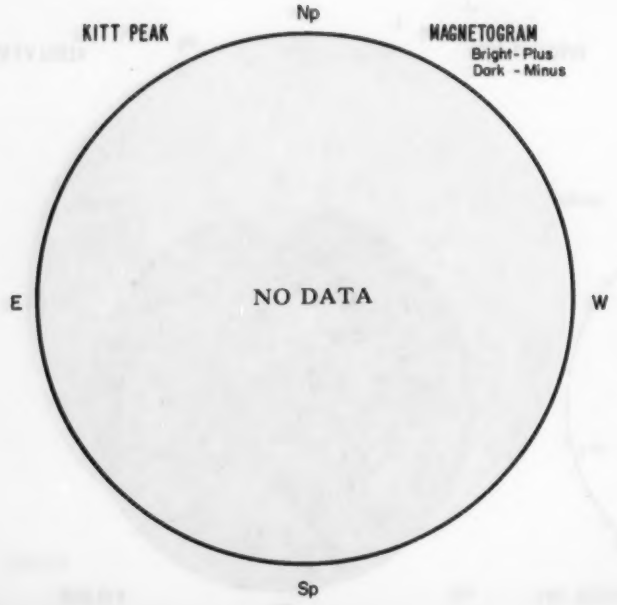
1913 UT

JULY 23, 1980 (P = 7.18, B_o = 5.10, L_o = 132.08)

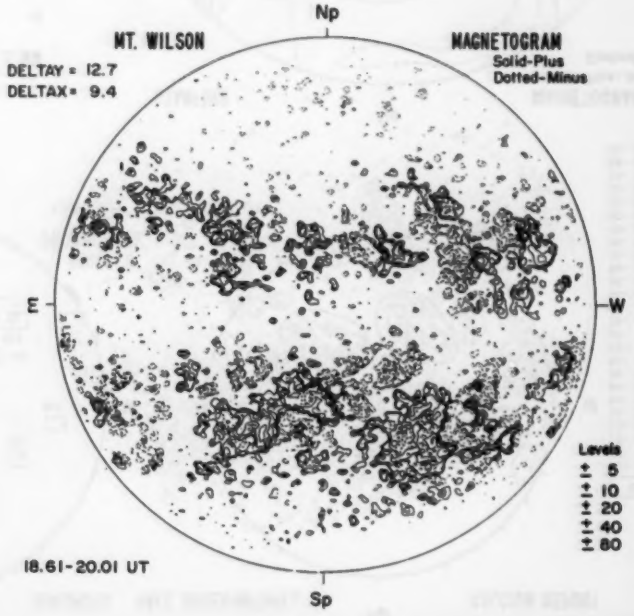
SACRAMENTO PEAK



KITT PEAK



MT. WILSON

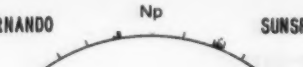


23

BOULDER

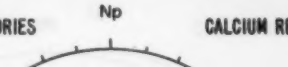
Hα

SAN FERNANDO



SUNSPOTS

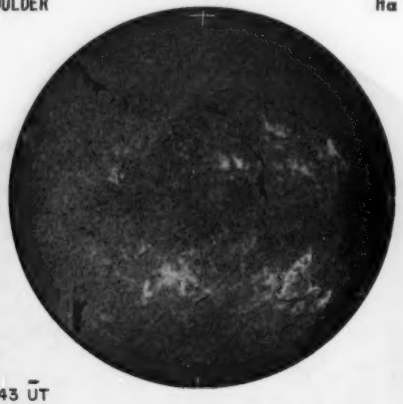
HALE OBSERVATORIES



CALCIUM REPORT

23

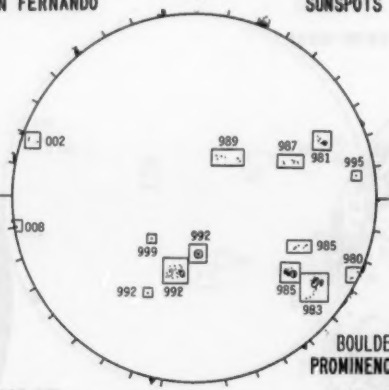
BOULDER Np Hα



1443 UT

Sp

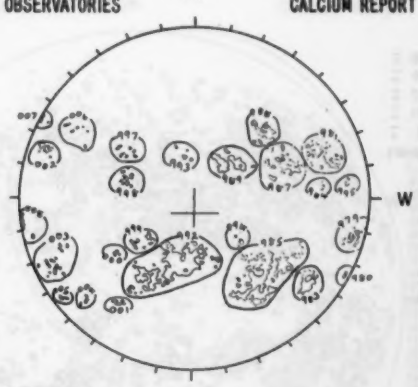
SAN FERNANDO Np SUNSPOTS



1440 UT

Sp

HALE OBSERVATORIES Np CALCIUM REPORT



BOULDER PROMINENCES

1443 UT

1717 UT

Sp

GOOD	JA
79-	1000-3.0
80-	0200-3.0
81-	1900-3.5
83-	1200-3.0
84-	0200-2.5
85-	6000-3.0
87-	1400-3.0
88-	1000-3.0
89-	1400-3.5
92-	5600-3.5
93-	0200-2.5
94-	0200-3.0
95-	0200-3.0
97-	0400-3.0
98-	0500-3.0
99-	0500-3.0
00-	0100-2.5
01-	0300-2.5
02-	0500-3.5
03-	0700-3.0
04-	0200-3.0
05-	0200-3.0
08-	0500-3.5

NOSC LA POSTA Np 2.0 CM

NO DATA

E EQUIPMENT W

---- UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

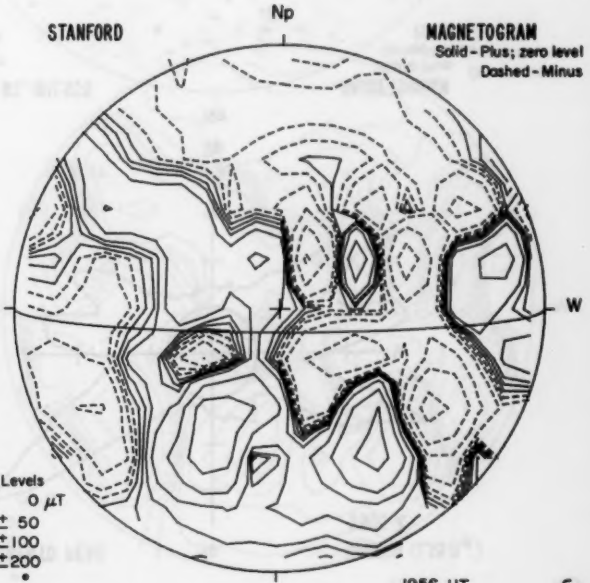
E EQUIPMENT W

---- UT Sp Ant. Temp. Unit 100° K

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



Levels

0 μT

± 50

±100

±200

1956 UT

Sp

93

Jul 80

JULY 24, 1980 (P = 7.60, B_o = 5.19, L_o = 118.85)

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å

E

W

1352 UT

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus

E

W

1434 UT

Sp

MT. WILSON

Np

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.7
DELTAX = 9.4

E

W

Levels
± 5
± 10
± 20
± 40
± 80

17.02-18.42 UT

Sp

24

BOULDER

Np

Hα

SAN FERNANDO

Np

SUNSPOTS

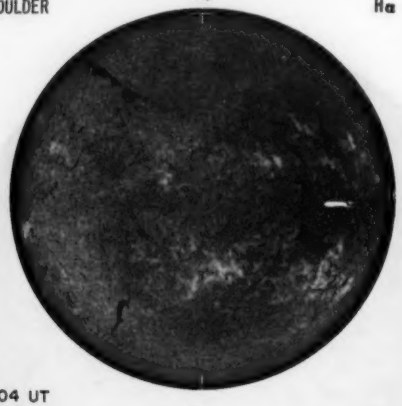
HALE OBSERVATORIES

Np

CALCIUM REPORT

24

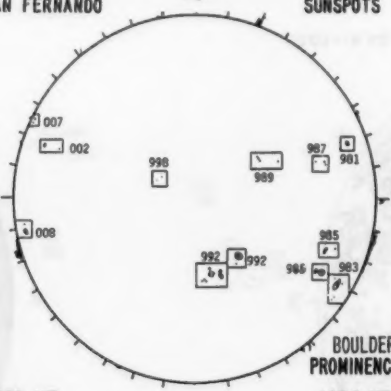
BOULDER Np Hα



1404 UT

Sp

SAN FERNANDO Np

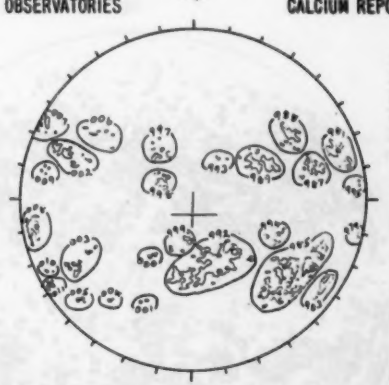


1450 UT

Sp

SUNSPOTS

HALE OBSERVATORIES Np



BOULDER PROMINENCES

1404 UT

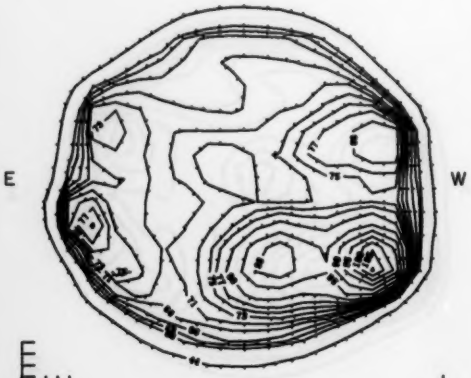
1625 UT

Sp

CALCIUM REPORT

6000	JA
81-	1600-3.0
83-	0600-2.5
85-	5600-3.0
87-	1500-3.0
88-	1100-3.0
89-	1500-3.5
92-	5500-3.5
94-	0400-2.5
97-	0500-3.0
98-	0500-3.0
99-	0400-2.5
00-	0200-2.5
01-	0200-2.5
02-	1000-3.0
03-	0700-2.5
04-	0100-2.5
05-	0200-3.0
07-	0700-3.5
08-	1200-4.0
09-	0200-2.5
11-	0300-3.0

NOSC LA POSTA Np 2.0 CM



1924 UT

Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

WEATHER

---- UT

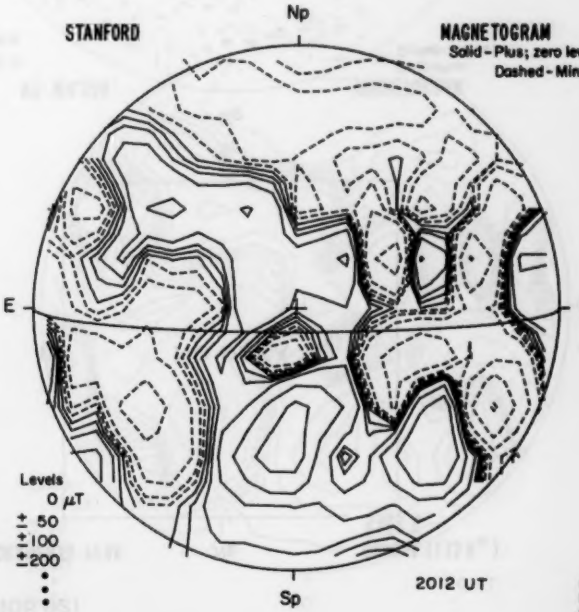
Sp Ant. Temp. Unit 100° K

STANFORD Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



2012 UT

Sp

95

Jul 80

JULY 25, 1980 (P = 8.02, B_o = 5.27, L_o = 105.62)

SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å

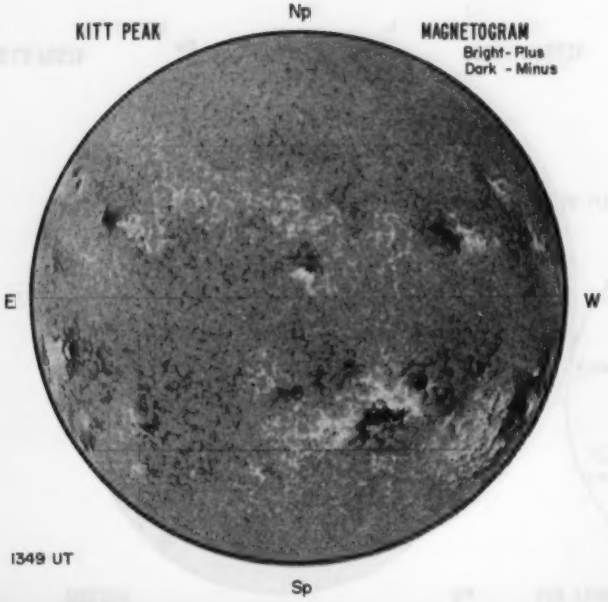
Np

E — NO DATA — W

Sp

KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

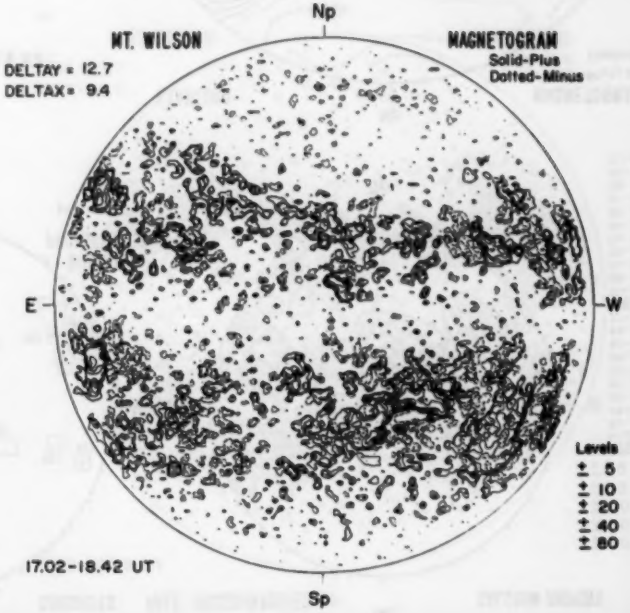


1349 UT

MT. WILSON

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.7
DELTAX = 9.4



17.02-18.42 UT

25

BIG BEAR

Hα

SAN FERNANDO

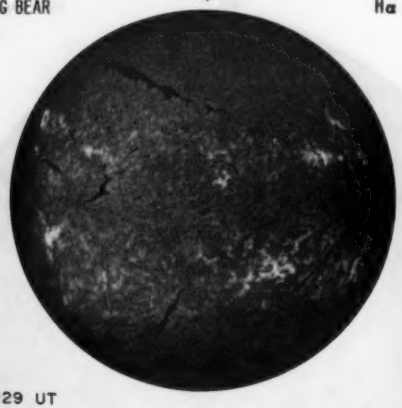
SUNSPOTS

HALE OBSERVATORIES

CALCIUM REPORT

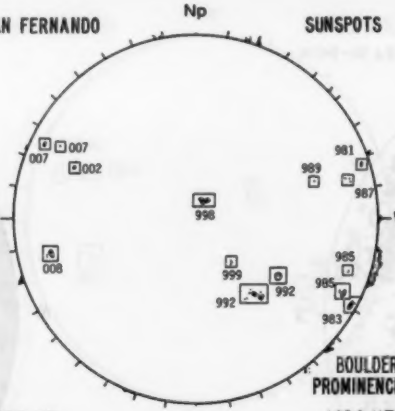
25

BIG BEAR Np Hα



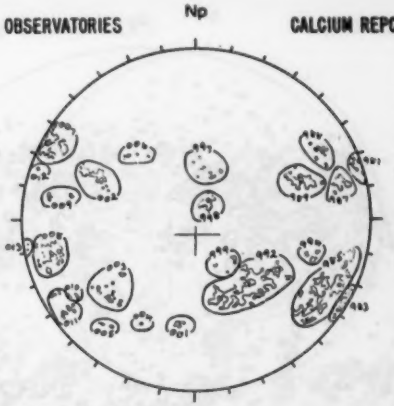
2129 UT Sp

SAN FERNANDO Np SUNSPOTS



1530 UT Sp

HALE OBSERVATORIES Np CALCIUM REPORT

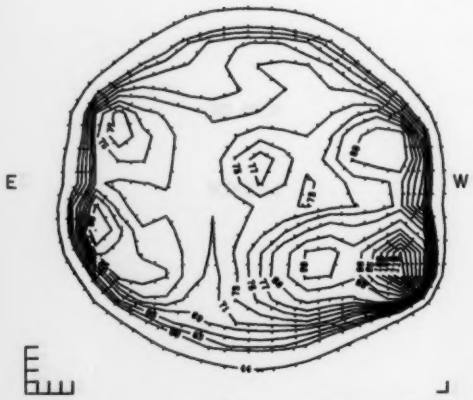


	GOOD	JA
81-	0700	3.0
83-	0700	2.5
85-	4600	3.0
87-	0900	3.5
88-	0600	3.0
89-	1400	3.5
92-	4600	3.5
94-	0300	3.0
97-	0500	3.0
98-	0600	3.0
99-	0300	3.0
01-	0200	3.0
02-	1200	3.5
03-	0600	3.0
04-	0100	2.5
05-	0200	3.0
07-	2200	4.0
08-	1700	4.0
09-	0300	2.5
10-	0200	3.0
11-	0800	3.0
13-	0200	3.0

1657 UT Sp

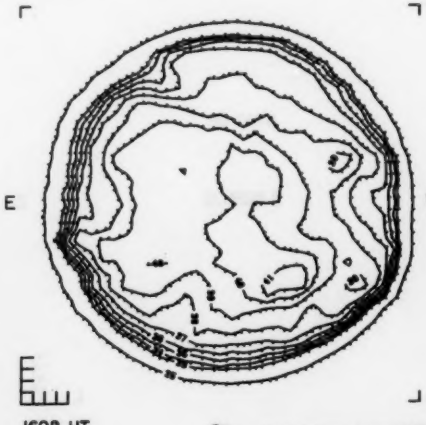
BOULDER PROMINENCES 1404 UT

NOSC LA POSTA Np 2.0 CM



1540 UT Sp Ant. Temp. Unit 100° K

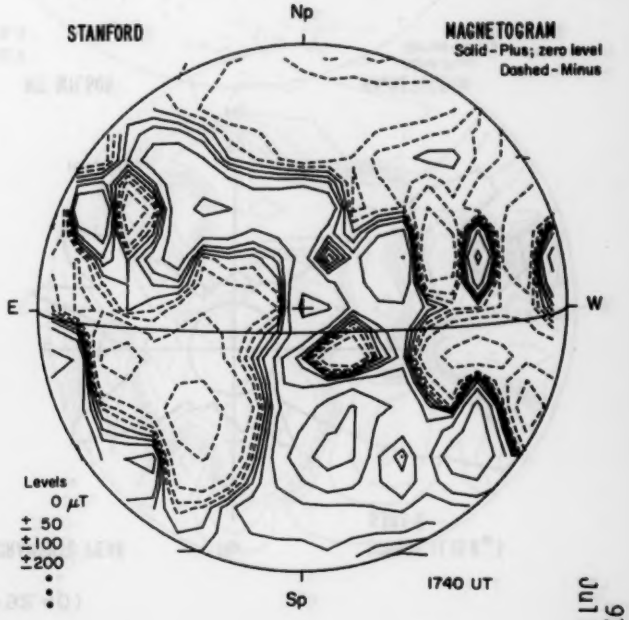
NOSC LA POSTA Np 8.6 MM



1608 UT Sp Ant. Temp. Unit 100° K

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus

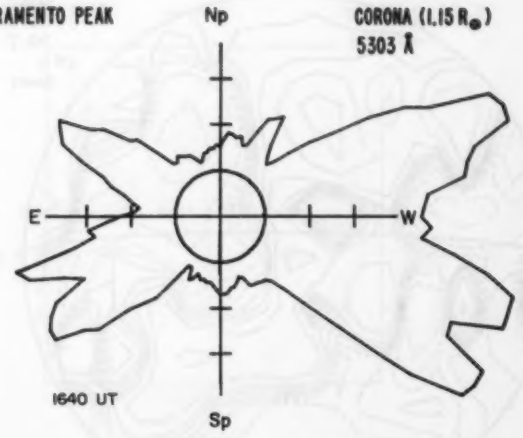


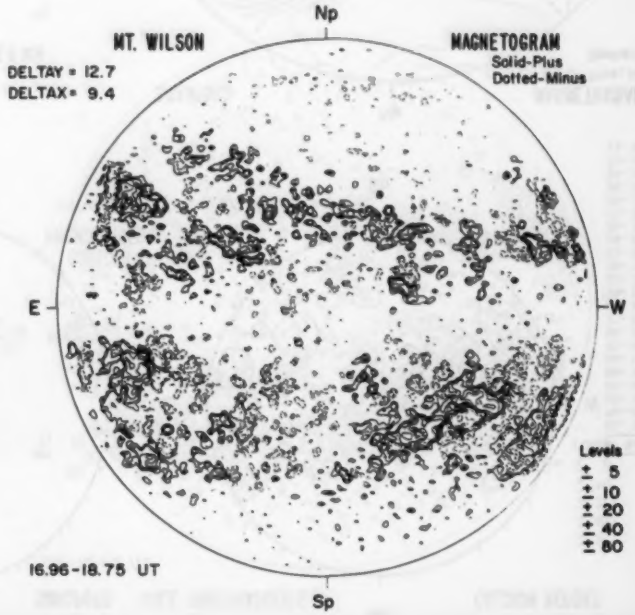
1740 UT Sp

97
Jul 80

JULY 26, 1980 (P = 8.44, B_o = 5.35, L_o = 92.40)

SACRAMENTO PEAK



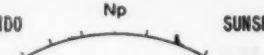


26

BIG BEAR

Hα

SAN FERNANDO



SUNSPOTS

HALE OBSERVATORIES

CALCIUM REPORT

26

BIG BEAR

Np

E W

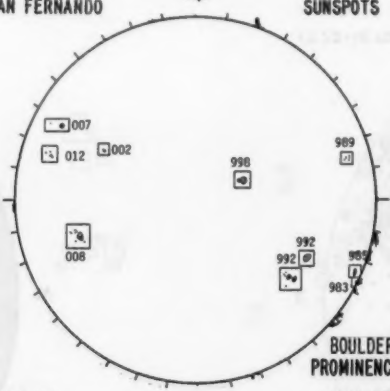
1706 UT

Sp

Hα

SAN FERNANDO

Np



E W

1450 UT

Sp

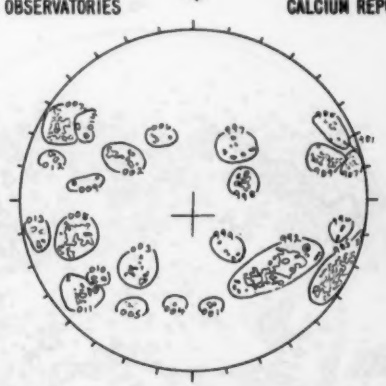
SUNSPOTS

BOULDER PROMINENCES

1400 UT

HALE OBSERVATORIES

Np



E W

1755 UT

Sp

CALCIUM REPORT

GOOD	JA
81- 0300-2.5	
85- 3400-3.0	
87- 0800-3.0	
88- 0500-3.0	
89- 1200-3.0	
92- 4900-3.5	
97- 0500-2.5	
98- 0600-2.5	
99- 0200-2.5	
01- 0100-3.0	
02- 0800-3.5	
03- 0600-3.5	
04- 0100-2.5	
05- 0300-2.5	
06- 0200-2.5	
07- 2100-4.0	
08- 3000-4.5	
09- 0200-2.5	
10- 0300-3.0	
11- 0900-3.0	
12- 0200-3.5	
13- 0900-3.0	
14- 0300-3.5	

NOSC LA POSTA

Np

2.0 CM

NO DATA

E

SCHEDULE

W

---- UT

Sp

Ant. Temp. Unit 100° K

NOSC LA POSTA

Np

8.6 MM

NO DATA

E

SCHEDULE

W

---- UT

Sp

Ant. Temp. Unit 100° K

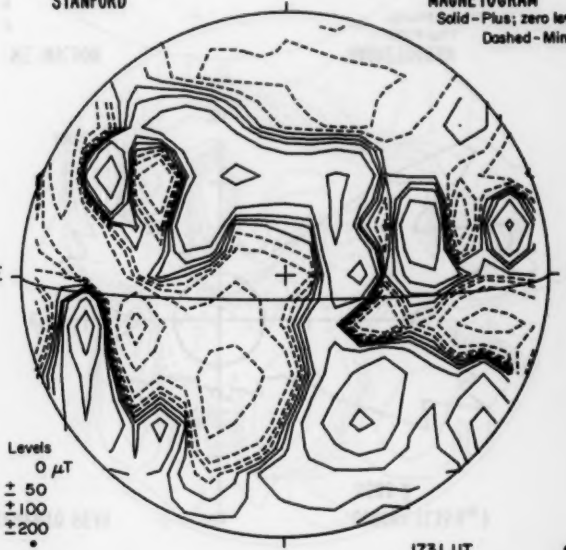
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Levels

0 μT

± 50

±100

±200

1731 UT

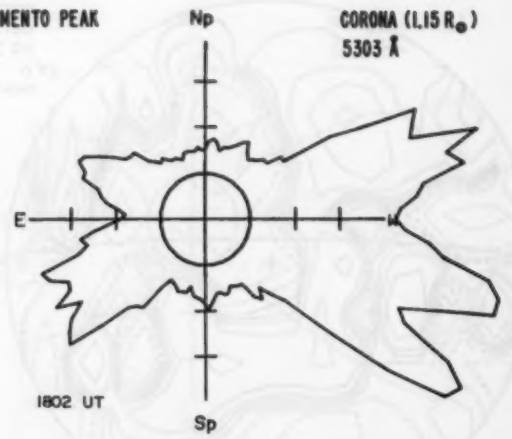
Sp

99

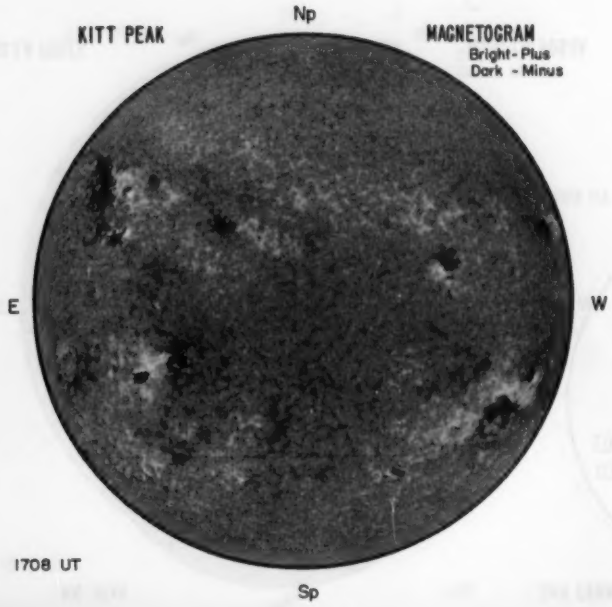
Jul 80

JULY 27, 1980 (P = 8.86, B_o = 5.43, L_o = 79.17)

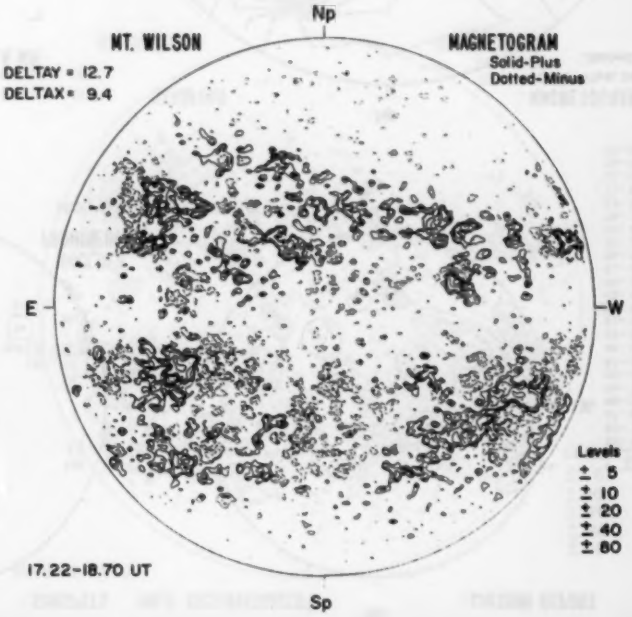
SACRAMENTO PEAK



KITT PEAK

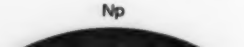


MT. WILSON



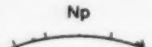
27

BIG BEAR



Hα

SAN FERNANDO



SUNSPOTS

HALE OBSERVATORIES

CALCIUM REPORT

27

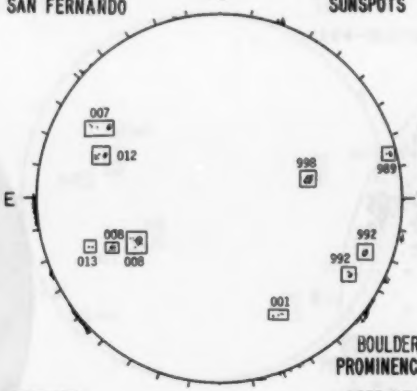
BIG BEAR Np Hα

E W

1719 UT

Sp

SAN FERNANDO Np SUNSPOTS



E W

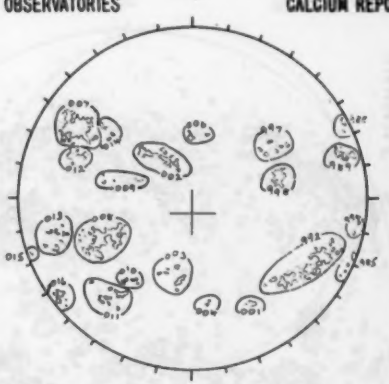
1520 UT

Sp

BOULDER PROMINENCES

1459 UT

HALE OBSERVATORIES Np



E W

1755 UT

Sp

CALCIUM REPORT

	GOOD	JA
85-	0500	3.0
88-	0500	3.0
89-	1100	3.0
92-	4500	3.0
94-	0200	2.5
97-	0400	3.0
98-	0900	3.0
01-	0300	3.0
02-	1100	3.5
03-	0400	3.0
04-	0100	2.5
06-	0300	2.5
07-	3950	4.0
08-	3000	3.5
09-	0300	3.0
10-	0200	3.0
11-	0900	3.0
12-	0800	3.5
13-	0600	3.0
14-	0300	3.5
15-	0200	2.5
16-	0700	3.5

NOSC LA POSTA Np 2.0 CM

NO DATA

E SCHEDULE W

---- UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

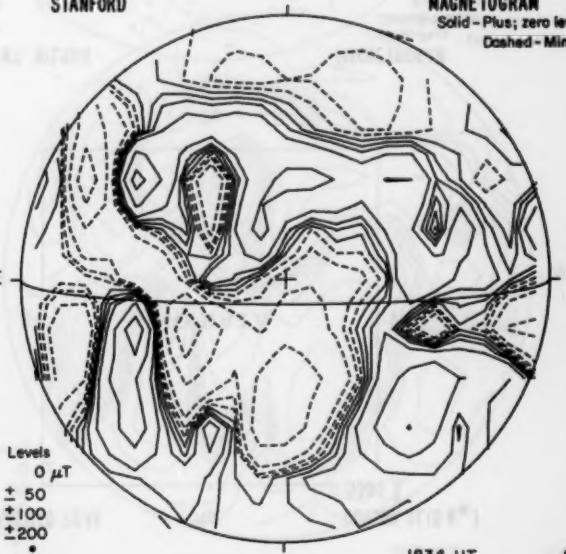
E SCHEDULE W

---- UT Sp Ant. Temp. Unit 100° K

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Levels 0 μT

± 50

±100

±200

1834 UT

Sp

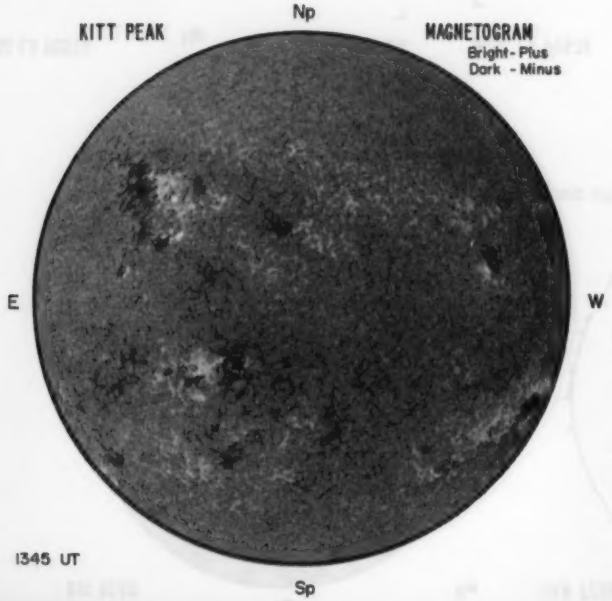
JULY 28, 1980 (P = 9.27, B_o = 5.51, L_o = 65.94)

SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å

KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

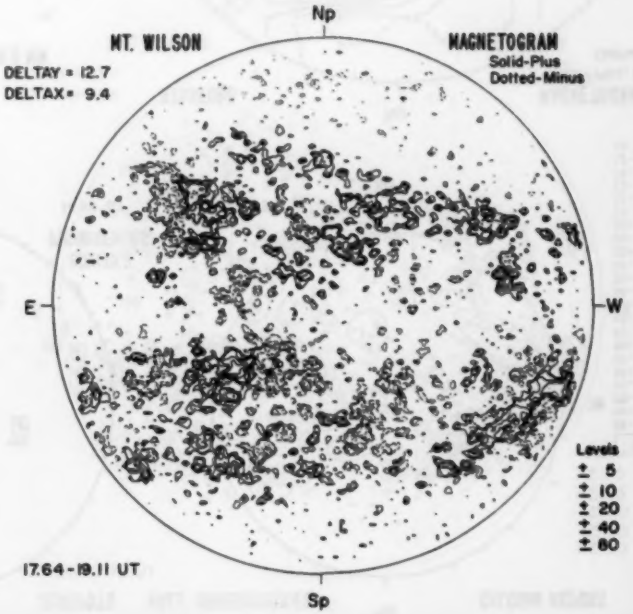


1345 UT

MT. WILSON

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.7
DELTAX = 9.4



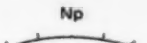
17.64 - 19.11 UT

28

BIG BEAR

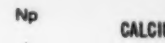
Hα

SAN FERNANDO



SUNSPOTS

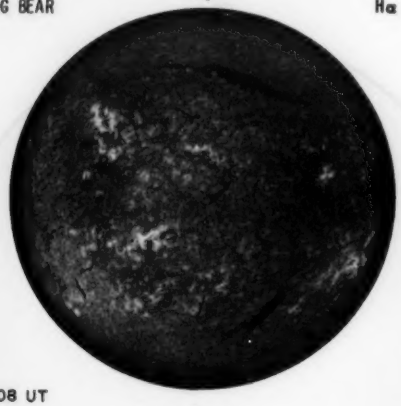
HALE OBSERVATORIES



CALCIUM REPORT

28

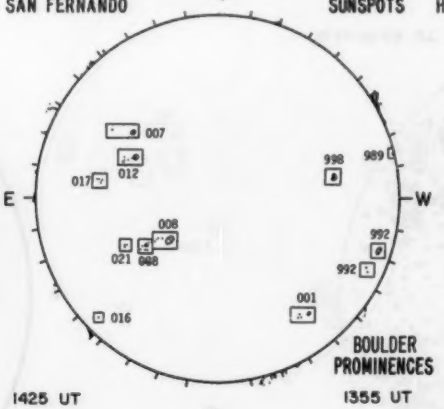
BIG BEAR Np Hα



E W

1808 UT Sp

SAN FERNANDO Np SUNSPOTS



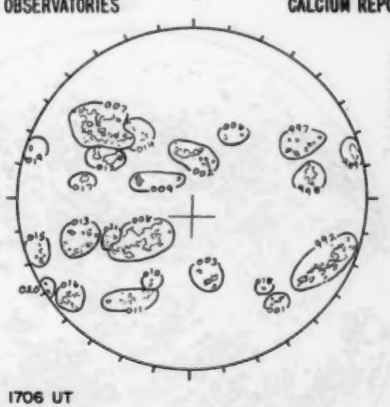
E W

1425 UT Sp

BOULDER PROMINENCES

1355 UT

HALE OBSERVATORIES Np



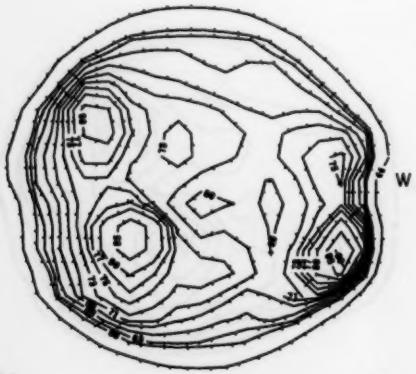
E W

1706 UT Sp

CALCIUM REPORT

	FAIR	JA
89-	1000-	3.0
92-	2300-	3.0
97-	0600-	3.0
98-	0800-	3.5
01-	0200-	3.0
02-	0800-	3.5
03-	0400-	3.0
06-	0200-	2.5
07-	4200-	4.0
08-	3100-	3.5
09-	0300-	3.0
10-	0200-	2.5
11-	0600-	3.0
12-	1100-	3.5
13-	0700-	3.0
14-	0400-	3.0
15-	0400-	2.5
16-	0700-	3.5
17-	0300-	3.5
18-	0100-	2.5
19-	0200-	3.0
20-	0200-	2.5
21-	0400-	3.0

NOSC LA POSTA Np 2.0 CM



E W

1614 UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

CLOUDY

E W

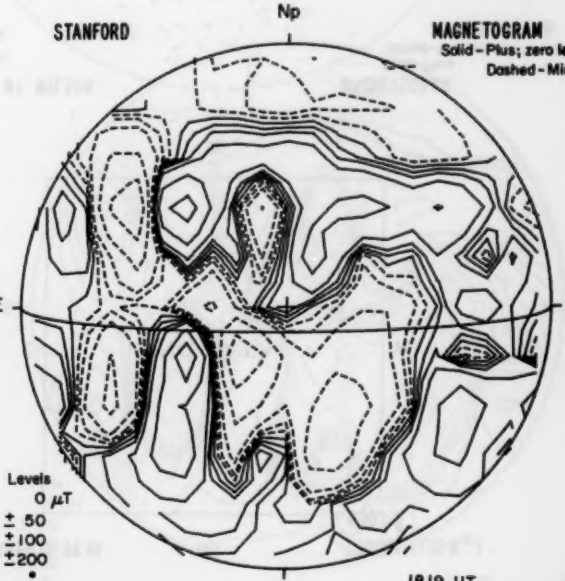
1745 UT Sp Ant. Temp. Unit 100° K

STANFORD Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Levels 0 μT

± 50

±100

±200

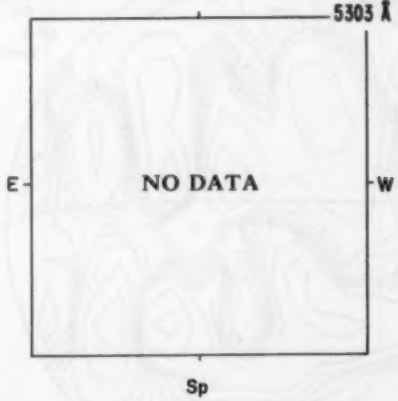
1819 UT Sp

103

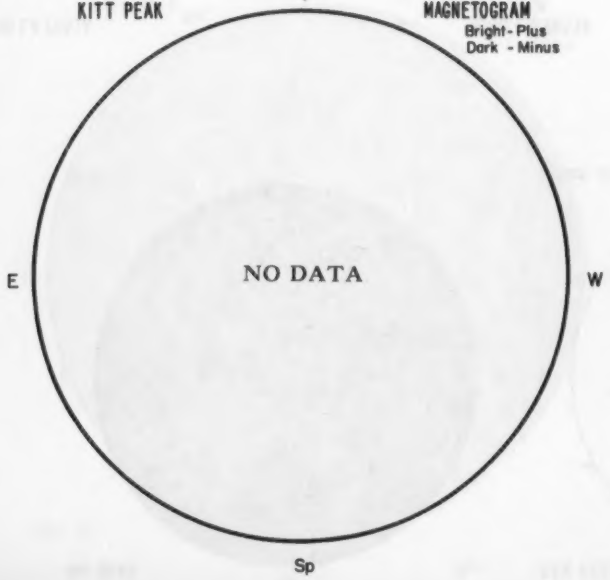
Jul 80

JULY 29, 1980 (P=9.68, B_o=5.59, L_o=52.71)

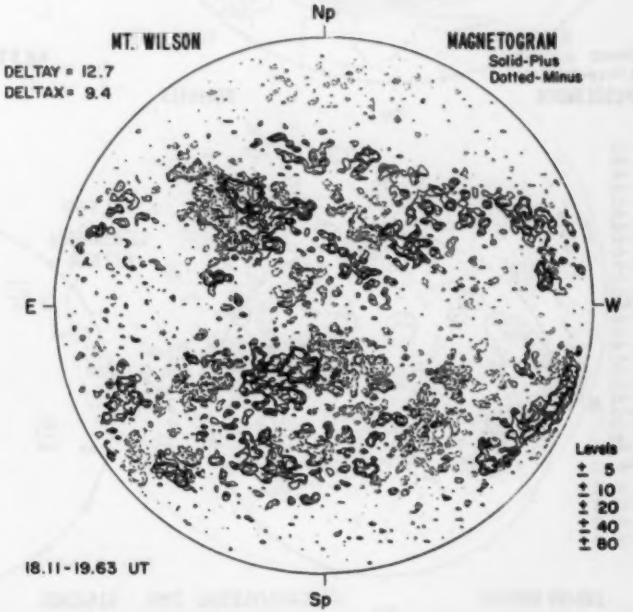
SACRAMENTO PEAK — CORONA (1.15 $R_\odot$) 5303 Å



KITT PEAK — MAGNETOGRAM
Bright - Plus
Dark - Minus



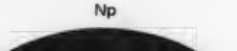
MT. WILSON — MAGNETOGRAM
Solid-Plus
Dotted-Minus
DELTAY = 12.7
DELTAX = 9.4



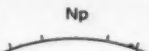
18.11-19.63 UT

29

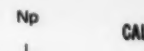
BIG BEAR — Hα



SAN FERNANDO



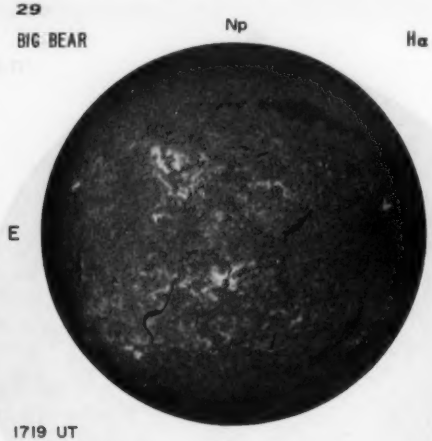
SUNSPOTS — HALE OBSERVATORIES



CALCIUM REPORT

29

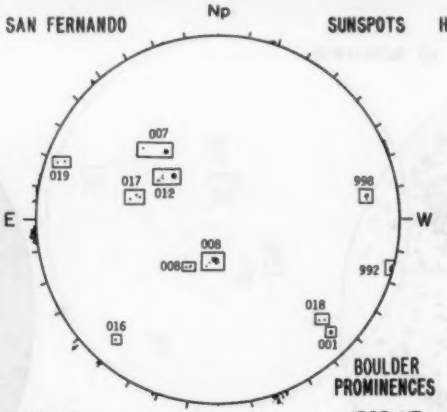
BIG BEAR



1719 UT

Hα

SAN FERNANDO



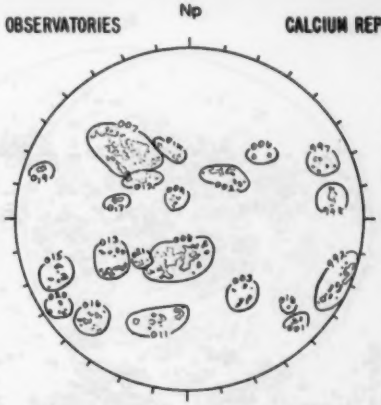
1425 UT

SUNSPOTS

BOULDER PROMINENCES

1353 UT

HALE OBSERVATORIES



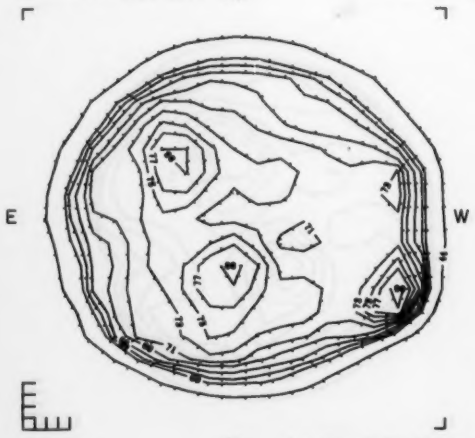
1712 UT

CALCIUM REPORT

FAIR	JA
92- 2600-3.0	
97- 0300-2.5	
98- 0600-3.5	
01- 0200-2.5	
02- 0600-3.0	
03- 0400-2.5	
06- 0200-3.0	
07- 4000-4.0	
08- 2900-3.5	
09- 0200-3.0	
11- 0700-3.0	
12- 0600-3.5	
13- 0600-3.0	
14- 0300-3.0	
15- 0400-2.5	
16- 0600-3.0	
17- 0200-3.0	
19- 0300-3.5	
20- 0300-3.0	
21- 0200-3.0	

NOSC LA POSTA

2.0 CM

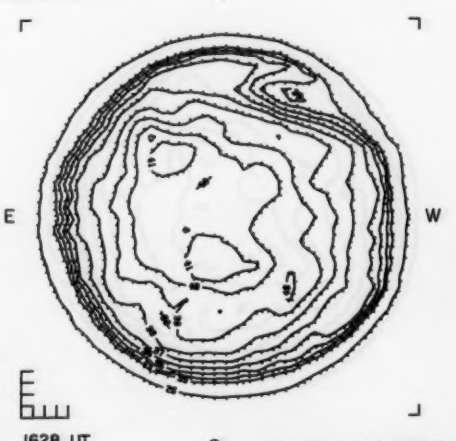


1601 UT

Ant. Temp. Unit 100° K

NOSC LA POSTA

8.6 MM



1628 UT

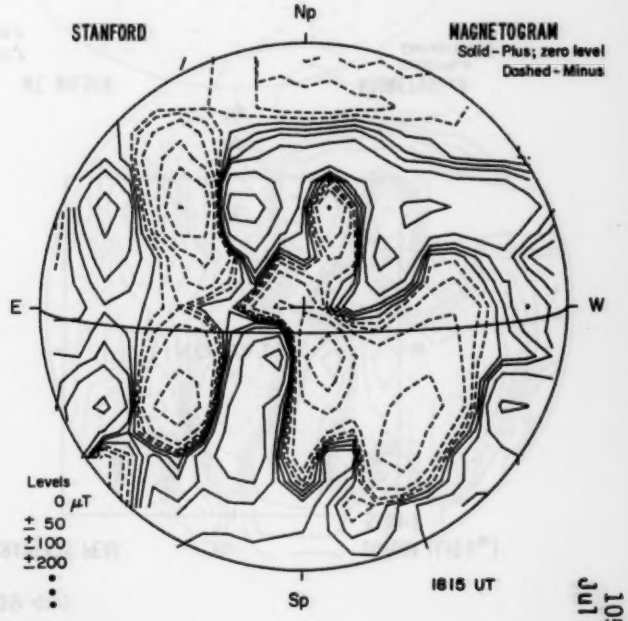
Ant. Temp. Unit 100° K

STANFORD

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



Levels

0 μT

± 50

±100

±200

1815 UT

105

Jul 80

JULY 30, 1980 (P = 10.09, B_o = 5.67, L_o = 39.48)

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å

E — NO DATA — W

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus

E — W

1624 UT

Sp

NT. WILSON

Np

MAGNETOGRAM
Solid - Plus
Dotted - Minus

DELTAY = 12.7
DELTAX = 9.7

E — W

Levels
± 5
± 10
± 20
± 40
± 80

18.81-19.75 UT

Sp

30

BOULDER

Np

Hα

BOULDER

Np

SUNSPOTS

HALE OBSERVATORIES

Np

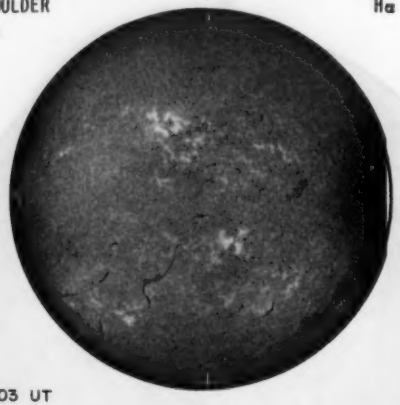
CALCIUM REPORT

Sp

Sp

30

BOULDER Np Hα

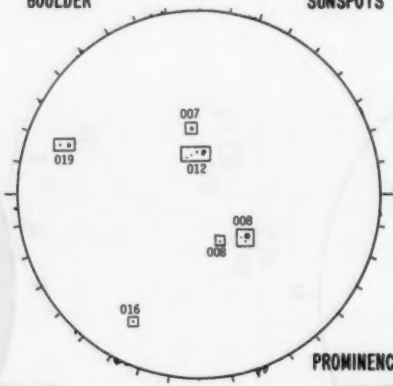


E W

1403 UT

Sp

BOULDER Np SUNSPOTS



E W

1745 UT

Sp

HALE OBSERVATORIES Np

E W

PROMINENCES

1403 UT

1850 UT

Sp

CALCIUM REPORT

	FAIR	JA
92-	0700	2.5
97-	0300	2.5
98-	0400	3.0
01-	0200	2.5
02-	0600	3.0
03-	0200	2.5
07-	4000	4.0
08-	2300	3.5
09-	0200	3.0
11-	0500	3.0
12-	0600	3.5
13-	0600	3.0
14-	0200	3.0
15-	0500	3.0
16-	1000	3.5
17-	0200	3.0
19-	0400	3.5
20-	0500	2.5
21-	0200	2.5

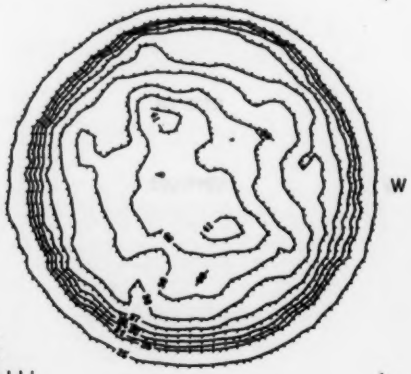
NOSC LA POSTA Np 2.0 CM

E W

1529 UT

Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM



E W

1604 UT

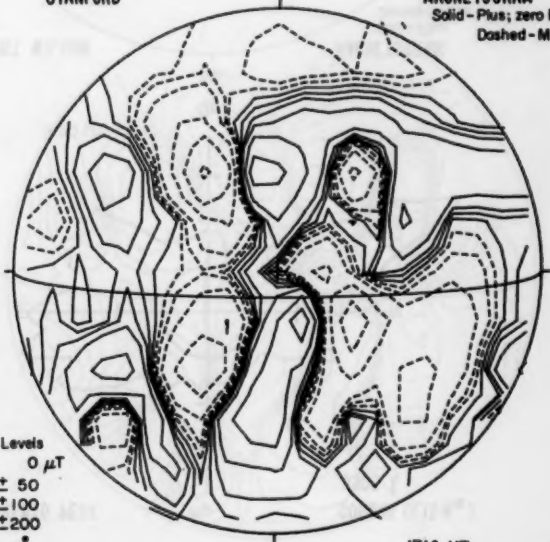
Sp Ant. Temp. Unit 100° K

STANFORD Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Levels

0 μT

± 50

±100

±200

1714 UT

Sp

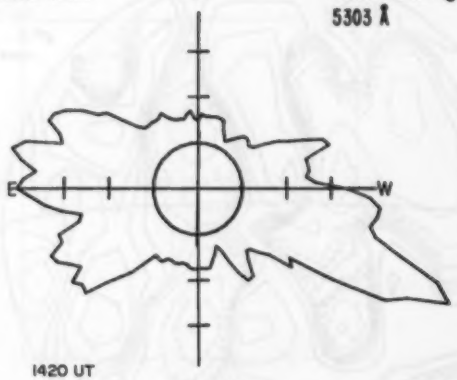
107

Jul 80

JULY 31, 1980 (P=10.49, B_o=5.74, L_o=26.26)

SACRAMENTO PEAK

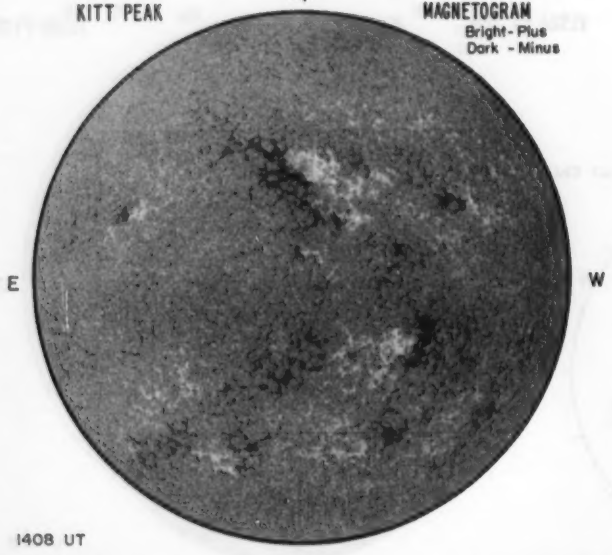
CORONA (1.15 $R_\odot$)
5303 Å



1420 UT

KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

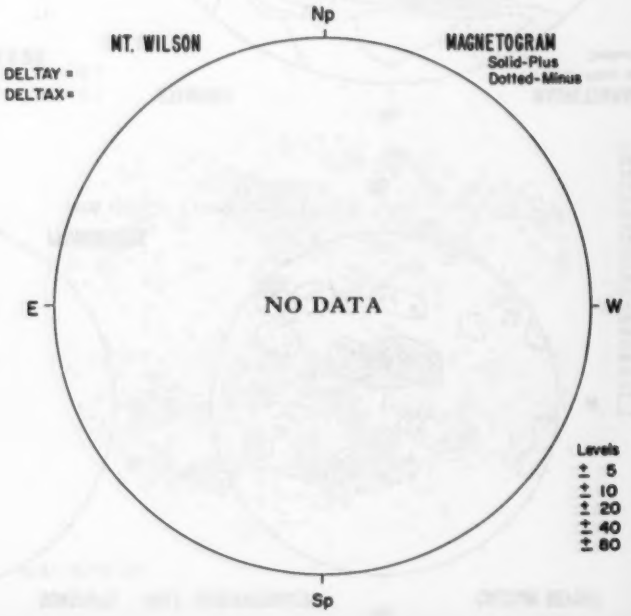


1408 UT

MT. WILSON

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

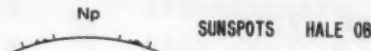


31

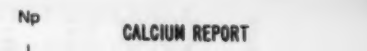
BOULDER

Hα

BOULDER



SUNSPOTS HALE OBSERVATORIES



CALCIUM REPORT

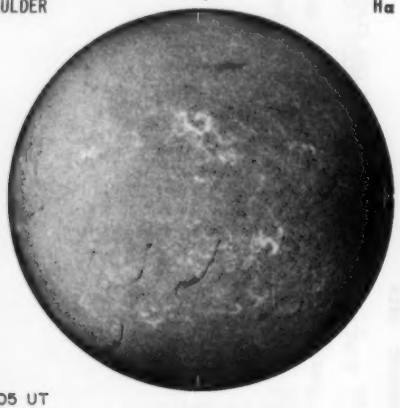
Sp

31

BOULDER

Np

Hα



E W

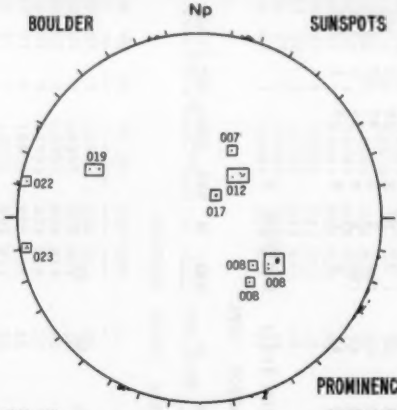
1405 UT

Sp

BOULDER

Np

SUNSPOTS



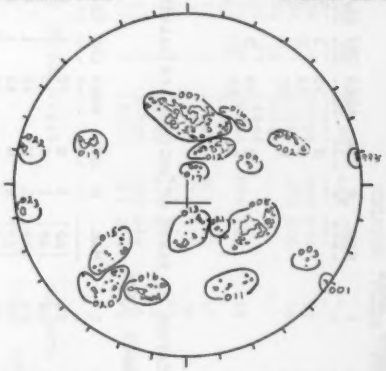
E W

1435 UT

Sp

HALE OBSERVATORIES

Np



E W

1719 UT

Sp

CALCIUM REPORT

	FAIR	JA
98-	0300	2.5
01-	0100	2.5
02-	0500	3.0
03-	0100	2.5
07-	4100	4.0
08-	2400	3.5
09-	0100	3.0
11-	0300	2.5
12-	0700	3.5
13-	0500	3.0
14-	0300	3.0
15-	0400	3.0
16-	0700	3.5
17-	0200	3.0
19-	0800	3.5
22-	0600	3.5
23-	0300	3.5

PROMINENCES

1405 UT

NOSC LA POSTA

Np

2.0 CM

NO DATA

E EQUIPMENT W

---- UT

Sp

Ant. Temp. Unit 100° K

NOSC LA POSTA

Np

8.6 MM

NO DATA

E EQUIPMENT W

---- UT

Sp

Ant. Temp. Unit 100° K

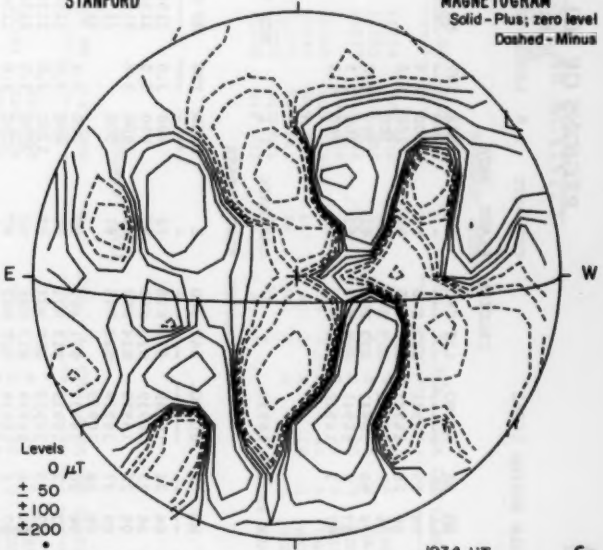
STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Levels

0 μT

± 50

±100

±200

1934 UT

Sp

109

Jul 80

REGIONS OF SOLAR ACTIVITY

JULY 1980

HALE REGION 16941 CMP DATE 1.0 RETURN OF LEADING PART OF REGION 16877 ROTATION 4

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
80	06	25	16941	S13	E70	65	200	1.5
80	06	26	16941	S13	E55	62	200	3.0
80	06	27	16941	S13	E45	61	300	
80	06	30	16941	S13	E01	63	300	3.0
80	07	2	16941	S14	W24	63	300	2.5
80	07	3	16941	S13	W37	63	300	1.5

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
	S17	E65				H	30	1	HRX
	S18	E52				H	30	1	HRX
	S18	E39				H	40	1	HRX
	S19	W18				H	50	9	CRO
	S18	W30				B	50	15	CRI

HALE REGION 16939 CMP DATE 1.1 NEW REGION IN LOCATION OF PARTS OF REGIONS 16873&16887

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
80	06	24	16939	S21	E78	70	600	3.0
80	06	25	16939	S23	E68	67	800	3.5
80	06	26	16939	S24	E52	65	800	3.5
80	06	27	16939	S22	E45	61	500	
80	06	28	16939					
80	06	30	16939	S21	E02	62	700	3.5
80	07	2	16939	S19	W22	61	800	3.5
80	07	3	16939	S19	W34	60	1200	3.0
80	07	4	16939	S17	W46	60	2000	3.0
80	07	5	16939	S17	W62	61	3000	3.0
80	07	6	16939	S18	W70	56	700	3.0
80	07	7	16939					

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
21549	S17	E78	69	(AP)	3	B	30	1	HSX
21549	S17	E65	69	(AP)	3	H	30	1	HRX
21549	S19	E52	69	(AP)	3	H	30	1	HRX
21549	S17	E38	70	(AP)	4	H	40	1	HRX
21549	S17	E26	68	(AP)	2	H	30	2	CRO
21566	S19	W18	60	(BF)	3	H	50	9	CRO
21566	S19	W33	61	(B)	3	H	60	10	DAO
21566	S18	W45	60	(B)	3	H	80	13	DAI
21566	S18	W60	62	(BP)	3	H	40	10	ESO
21566	S18	W72	60	(BP)	3	H	30	1	HSX
21566	S22	W73	48	X	1	H	10	1	AXX

HALE REGION 16945 CMP DATE 2.3 RETURN OF REGION 16872 ROTATION 3

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
80	06	26	16945	N26	E64	53	600	2.0
80	06	27	16945	N27	E55	51	500	
80	06	30	16945	N27	E18	46	1000	3.0
80	07	2	16945	N27	W06	45	800	3.0
80	07	3	16945	N28	W18	44	500	2.5
80	07	4	16945	N28	W32	46	500	2.5
80	07	5	16945	N28	W45	44	500	2.5
80	07	6	16945	N29	W55	41	500	2.0
80	07	7	16945	N29	W70	43	200	2.0

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
21571	N26	W35	50	AP	1				

HALE REGION 16948 CMP DATE 2.6 NEW REGION,TRAILING PART IN LOCATION OF LEADING PART 16882

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
80	06	26	16948	S12	E78	39	500	3.0
80	06	27	16948	S10	E66	40	400	
80	06	28	16948					
80	06	30	16948	S09	E23	41	500	3.0
80	07	2	16948	S09	W03	42	300	3.0
80	07	3	16948	S08	W18	44	300	3.0
80	07	4	16948	S07	W31	45	200	3.0
80	07	5	16948	S07	W45	44	100	3.0
80	07	6	16948	S07	W59	45	200	2.5

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
	S10	E70				H	30	3	BXO
21560	S08	E53	41	AP	1				
	S10	E13				M	200	21	DAO

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HALE REGION 16946 CMP DATE 2.9

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	06	26	16946	N08	E79	38	300	3.5										
80	06	27	16946	N09	E70	36	800		21555	N09	E78	30	AP	2	H	80	5	CAO
80	06	28	16946						21555	N09	E59	35	(B)	4	H	70	6	CAO
80	06	29	16946						21555	N09	E44	37	(B)	3	H	20	4	BXO
80	06	30	16946	N09	E28	36	1700	3.5		N09	E28				B	30	9	BXI
80	07	1	16946						21555	N09	E15	40	(BP)	3	H	40	6	CRO
80	07	2	16946	N09	E02	37	1400	3.5	21555	N09	W02	44	(B)	2	H	10	1	AXX
80	07	3	16946	N10	W10	36	1500	3.5	21555	N09	W11	39	(BP)	3	H	40	8	BXO
80	07	4	16946	N11	W23	37	1300	3.5	21555	N12	W14	29	AF	1				
80	07	5	16946	N11	W37	36	1100	3.5	21555	N10	W35	37	(B)	2				
80	07	6	16946	N09	W49	35	1300	3.5										
80	07	7	16946	N11	W64	37	700	3.0										

HALE REGION 16949 CMP DATE 3.2

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	06	26	16949	S25	E79	38	400	3.0										
80	06	27	16949	S25	E70	36	700			S25	E69				H	10	1	AXX
80	06	28	16949						21561	S24	E54	40	AP	1	H	30	3	BXO
80	06	30	16949	S24	E30	34	900	3.0		S22	E27				B	10	2	BXO
80	07	2	16949	S24	E05	34	1000	3.5										
80	07	3	16949	S24	W10	36	1100	3.0										
80	07	4	16949	S24	W24	38	1000	3.0										
80	07	5	16949	S24	W35	34	900	3.0										
80	07	6	16949	S24	W48	34	500	3.0										
80	07	7	16949	S24	W58	31	300	2.5										

HALE REGION 16955 CMP DATE 3.6

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	2	16955	N28	E13	26	700	4.0	21567	N28	E14	28	(B)	3	H	50	7	CRO
80	07	3	16955	N28	W02	28	1000	3.5	21567	N28	E01	27	(BY)	4	B	90	23	DSI
80	07	4	16955	N28	W14	28	1400	4.0	21567	N28	W13	28	(D)	4	H	150	23	EAI
80	07	5	16955	N28	W28	27	1100	4.0	21567	N29	W25	27	(D)	5	H	360	36	EKI
80	07	6	16955	N28	W39	25	1700	3.5	21567	N29	W40	28	(D)	4	H	420	29	EKI
80	07	7	16955	N28	W53	26	1400	3.5	21567	N28	W54	29	(D)	4	H	430	25	EKI
80	07	8	16955						21567	N27	W65	27	(D)	4	H	640	19	EKI
80	07	9	16955						21567	N27	W66	15	(BF)	4	B	270	9	DAO
80	07	10	16955						21567	N28	W78	13	AP	2	H	160	2	CSO

HALE REGION 16956 CMP DATE 3.8

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	2	16956	S05	E15	24	100	2.5										
80	07	3	16956	S05	E01	25	200	3.0	21568	S06	E03	25	(B)	3	H	50	7	BXO
80	07	4	16956	S05	W12	26	300	3.0	21568	S05	W11	26	(BF)	3	H	50	9	DAO
80	07	5	16956	S05	W27	26	500	3.5	21568	S05	W25	27	(B)	4	H	100	16	DAO
80	07	6	16956	S05	W40	26	700	3.0	21568	S05	W39	27	(B)	4	H	80	8	DSO
80	07	7	16956	S04	W55	28	600	3.0	21568	S05	W54	29	(B)	3	H	40	4	CRO
80	07	8	16956						21568	S05	W67	29	(B)	3	H	10	2	BXO

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HALE REGION 16953 CMP DATE 5.0 LEADING PART NEW, TRAILING PART 16884 ROTATIONS 1 AND 2

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	06	30	16953	S14	E62	2	1300	3.5		S13	E71				H	20	1	HSX
80	07	2	16953	S13	E29	10	1100	3.5										
80	07	3	16953	S12	E17	9	1600	3.5		S09	E18				H		1	AXX
80	07	4	16953	S11	E04	10	1200	3.5	21570	S12	E08	7	(AP)	2	H	10	2	AXX
80	07	5	16953	S11	W12	11	1000	3.5		S07	W18				H	40	6	CRO
80	07	6	16953	S11	W24	10	900	3.0		S12	W18				R	20	2	AXX
80	07	7	16953	S09	W38	11	700	3.0										
80	07	8	16953						21579	S10	W40	2	(AP)	2	P	20	4	BXO
80	07	9	16953						21579	S12	W60	9	(AP)	2				

HALE REGION 16952 CMP DATE 5.5

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	06	29	16952						21563	N30	E66	15	(B)	3				
80	06	30	16952	N29	E55	9	500	3.0		N30	E62				R	10	1	AXX
80	07	2	16952	N29	E32	7	200	2.5		N28	E24				B	40	7	CRO
80	07	3	16952	N29	E19	7	300	2.0										
80	07	4	16952	N29	E08	6	200	2.0										
80	07	5	16952	N28	W04	3	200	2.5										
80	07	6	16952	N28	W15	1	100	1.5										
80	07	7	16952	N30	W31	4	100	3.0		N30	W33				P	10	1	AXX

HALE REGION 16957 CMP DATE 5.9 RETURN OF PART OF REGIONS 16884 & 16889 ROTATIONS 2 AND 3

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	2	16957	S18	E39	0	500	3.0										
80	07	3	16957	S18	E27	359	400	3.0		S15	E36				B	30	7	BXO
80	07	4	16957	S18	E13	1	300	2.5		S15	E23				H	40	8	BXO
80	07	5	16957	S19	E01	358	400	3.0										
80	07	6	16957	S19	W14	0	400	2.5										
80	07	7	16957	S18	W26	359	300	3.0		S14	W17				H	20	6	BXO

HALE REGION 16959 CMP DATE 6.4

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	2	16959	N20	E46	353	400	3.0										
80	07	3	16959	N22	E32	354	300	2.5										
80	07	4	16959	N23	E20	354	200	2.5										
80	07	5	16959	N23	E06	353	200	2.0										
80	07	6	16959	N23	W05	351	200	2.0										
80	07	7	16959	N24	W18	351	200	2.0										
80	07	11	16959	N25	W70	352	200	2.0										

HALE REGION 16954 CMP DATE 6.5 NORTH PART NEW, SOUTH LEADING PORTION 16885 ROTATIONS 1&4

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	06	30	16954	S28	E68	356	300	2.5										
80	07	2	16954	S28	E46	353	800	3.0										
80	07	3	16954	S28	E32	354	700	3.0	21569	S32	E40	348	(AP)	2				
80	07	4	16954	S28	E22	352	600	3.0										
80	07	5	16954	S28	E08	351	800	3.0										
80	07	6	16954	S28	W04	350	600	3.0										
80	07	7	16954	S28	W18	351	700	3.0										
80	07	11	16954	S28	W67	349	300	2.5										

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HALE REGION 16958 CMP DATE 6.5 RETURN OF 16904 &TRAILING PART OF 16884 ROTATION 2

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
80	07	1	16958					
80	07	2	16958	S15	E47	352	1400	4.0
80	07	3	16958	S15	E35	351	1700	4.0
80	07	4	16958	S15	E24	350	1300	3.5
80	07	5	16958	S15	E08	351	1200	3.5
80	07	6	16958	S16	W04	350	900	3.5
80	07	7	16958	S15	W16	349	900	3.0
80	07	9	16958					
80	07	10	16958					
80	07	11	16958	S15	W67	349	300	3.0

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
21564	S14	E63	352	(B)	2	H	30	4	CRO
21564	S15	E50	352	(BF)	3	H	40	10	CRO
21564	S15	E36	352	(B)	3	H	30	7	BXO
21564	S14	E24	351	(BF)	3	H	40	8	BXO
21564	S15	E13	349	(AF)	2	H	10	4	BXO
21564	S15	W02	350	(BF)	3	P	20	4	BXO
21564	S15	W16	351	(B)	2	H	20	6	BXO
21582	S15	W41	350	(AF)	3	H	20	2	CSO
21582	S13	W54	349	(AF)	3	H	10	1	HSX
	S15	W64				H		1	AXX

HALE REGION 16961 CMP DATE 7.5

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
80	07	1	16961					
80	07	2	16961	S04	E66	333	400	2.5
80	07	3	16961	S04	E51	335	700	3.0
80	07	4	16961	S04	E48	326	500	3.0
80	07	5	16961	S04	E24	335	400	3.0
80	07	6	16961	S04	E05	341	400	3.0
80	07	7	16961	S04	W04	337	300	2.5
80	07	8	16961					
80	07	11	16961	S04	W55	337	200	3.0

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
21565	S04	E75	340	(AP)	3	H	10	1	AXX
21565	S04	E63	339	(AP)	2	H	10	1	AXX
21565	S04	E49	339	(AP)	2	H	10	1	AXX
21565	S04	E36	339	(AP)	2	H	20	3	BXO
21572	S05	E30	332	(AF)	2				
21580	S06	W07	329	(AF)	2	P	10	3	BXO

HALE REGION 16962 CMP DATE 7.8

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
80	07	2	16962	S10	E67	332	200	2.0
80	07	3	16962	S10	E53	333	200	3.0
80	07	4	16962	S10	E41	333	200	3.5
80	07	5	16962	S10	E26	333	200	3.0
80	07	6	16962	S08	E62	284	100	1.5

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
	S13	E45				P	30	7	BXO
	S12	E70				H	150	1	HSX

HALE REGION 16960 CMP DATE 8.2 RETURN OF REGION 16897 ROTATION 2

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
80	07	2	16960	N15	E66	333	600	2.5
80	07	3	16960	N15	E55	331	700	2.5
80	07	4	16960	N14	E44	330	300	2.5
80	07	5	16960	N14	E32	327	400	2.5
80	07	6	16960	N14	E20	326	300	2.0
80	07	7	16960	N15	E05	328	200	2.5
80	07	11	16960	N14	W48	330	200	3.0
80	07	12	16960	N14	W62	329	100	2.0

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS

HALE REGION 16972 CMP DATE 9.9

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
80	07	10	16972					
80	07	11	16972	S11	W24	306	200	3.0
80	07	12	16972	S12	W39	306	100	3.0
80	07	13	16972	S12	W51	305	100	2.5

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
21588	S12	W12	307	(B)	2				
21588	S11	W25	307	(B)	2	H		1	AXX
21588	S12	W36	306	(B)	2				

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HALE REGION 16971 CMP DATE 10.3

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	11	16971	N10	W18	300	100	2.0										

HALE REGION 16964 CMP DATE 10.6 RETURN OF REGION 16894 ROTATION 2

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	5	16964	N20	E62	297	200	3.5	21574	N21	E67	295	(B)	3	H	10	3	CSO
80	07	6	16964	N20	E50	296	400	3.5	21578	N14	E55	293	AP	1	M	30	3	CSO
80	07	6	16964	N20	E50	296	400	3.5	21574	N21	E52	296	(B)	3	H	40	3	CSO
80	07	7	16964	N22	E38	295	300	3.5	21574	N21	E39	296	(B)	2	H	20	4	BXO
80	07	8	16964						21574	N21	E27	295	(AP)	2	P	10	2	BXO
80	07	9	16964						21574	N21	E14	295	(AP)	2				
80	07	11	16964	N22	W14	296	100	3.0		N17	W05				P	230	13	CSO
80	07	12	16964	N21	W27	294	100	3.0		N18	W17				B	80	6	DSO
80	07	13	16964	N21	W39	293	100	3.0		N17	W34				H	90	8	DAO

HALE REGION 16967 CMP DATE 10.6 RETURN OF REGIONS 16893 AND 16900 ROTATIONS 3 AND 2

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	5	16967	S23	E58	301	500	2.5										
80	07	6	16967	S24	E47	299	400	2.5		S23	E53				R	40	7	BXO
80	07	7	16967	S24	E35	298	500	2.5		S20	E42				R	30	4	BXO
80	07	11	16967	S23	W15	297	200	2.5										

HALE REGION 16966 CMP DATE 11.1

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	5	16966	S08	E70	289	300	3.0	21576	S07	E71	291	(AP)	2				
80	07	6	16966	S08	E60	286	400	3.0	21576	S06	E59	289	(B)	3				
80	07	7	16966	S07	E45	288	300	3.0										
80	07	8	16966						21576	S06	E34	288	(B)	2	P	20	4	BXO
80	07	9	16966						21576	S07	E20	289	(B)	2				
80	07	11	16966	S07	W08	290	400	3.0										
80	07	12	16966	S08	W24	291	200	3.0										
80	07	13	16966	S08	W38	292	300	2.5	21594	S08	W27	283	(AP)	2	H	80	1	HSX
80	07	14	16966	S08	W51	293	400	2.5	21594	S08	W39	282	(AP)	3	H		1	AXX
80	07	15	16966	S09	W65	293	300	2.0										
80	07	16	16966	S09	W78	294	200	2.5										

HALE REGION 16969 CMP DATE 11.1

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	7	16969	N23	E48	285	900	3.5		N23	E52				H	20	4	BXO
80	07	11	16969	N24	W08	290	100	3.0										
80	07	12	16969	N24	W23	290	100	3.0										

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HALE REGION 16965 CMP DATE 11.5 RETURN OF REGION 16898 ROTATION 2

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	5	16965	N17	E73	286	1200	4.0	21575	N17	E80	282	(AP)	3	H	290	7	DSO
80	07	6	16965	N17	E63	283	2500	4.0	21575	N17	E67	281	(BP)	4	H	250	7	DSO
80	07	7	16965	N17	E50	283	2200	4.0	21575	N17	E54	281	(BY)	4	H	290	13	CKO
80	07	8	16965						21575	N17	E41	281	(AP)	4	H	280	9	DKO
80	07	9	16965						21575	N17	E27	282	(BP)	5	H	260	12	ESO
80	07	10	16965						21575	N18	E15	280	(B)	5	H	220	15	DSO
80	07	11	16965	N17	W02	284	1700	3.5	21575	N17	E03	279	(AP)	5	H	230	7	DSO
80	07	11	16965	N17	W02	284	1700	3.5	21589	N17	W05	287	(AP)	2	P	230	13	CSO
80	07	12	16965	N17	W15	282	1700	3.0	21575	N16	W10	280	(D)	5	H	260	18	ESO
80	07	12	16965	N17	W15	282	1700	3.0	21589	N17	W17	287	(B)	4	H	260	18	ESO
80	07	13	16965	N17	W26	280	1300	2.5	21575	N17	W23	279	(D)	4	H	200	8	DAO
80	07	13	16965	N17	W26	280	1300	2.5	21589	N18	W31	287	(D)	4	H	90	8	DAO
80	07	14	16965	N17	W42	284	1100	3.0	21589	N18	W44	287	(B)	4	H	30	3	CRO
80	07	14	16965	N17	W42	284	1100	3.0	21575	N16	W36	279	(BP)	4	H	60	9	DAO
80	07	15	16965	N17	W54	282	1800	3.0	21589	N18	W52	282	(AF)	2	H	110	8	CAO
80	07	15	16965	N17	W54	282	1800	3.0	21575	N17	W50	280	(BP)	4	H	110	8	CAO
80	07	16	16965	N17	W67	283	1200	3.0	21589	N18	W67	283	(AF)	3	B	10	1	AXX
80	07	16	16965	N17	W67	283	1200	3.0	21575	N16	W66	282	(AP)	4	B	10	1	AXX
80	07	17	16965	N17	W78	280	300	3.0	21575	N18	W76	279	(AP)	3	H	50	1	HSX

HALE REGION 16970 CMP DATE 11.9 RETURN OF LEADING PART OF REGION 16901 ROTATION 4

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	5	16970						21577	S13	E85	277	AP	1	H	50	1	HSX
80	07	6	16970						21577	S13	E70	278	(AP)	3	H	150	1	HSX
80	07	7	16970	S12	E56	277	900	2.5	21577	S13	E57	278	(AP)	5	H	80	1	HSX
80	07	8	16970						21577	S12	E45	277	(AP)	5	H	160	1	HSX
80	07	9	16970						21577	S12	E32	277	(AP)	5	H	220	5	DSO
80	07	10	16970						21577	S12	E18	277	(AP)	5	H	190	3	CSO
80	07	11	16970	S10	E03	279	700	3.0	21577	S11	E04	278	(AP)	5	H	170	1	HSX
80	07	12	16970	S11	W09	276	700	3.0	21577	S12	W07	277	(AP)	5	H	170	4	CSO
80	07	13	16970	S11	W22	276	400	2.5	21577	S12	W21	277	(AP)	5	H	80	1	HSX
80	07	14	16970	S11	W35	277	500	2.0	21577	S12	W33	276	(AP)	5	H	60	2	HSX
80	07	15	16970	S12	W48	276	600	2.5	21577	S12	W46	276	(AP)	5	H	130	4	CAO
80	07	16	16970	S11	W62	278	500	2.0	21577	S12	W60	276	(AP)	3	B	100	1	HSX
80	07	17	16970	S10	W73	275	200	2.0	21577	S13	W73	276	(AP)	4	H	120	1	HSX

HALE REGION 16963 CMP DATE 12.2

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	4	16963	N23	E80	294	200	3.0										
80	07	5	16963	N23	E72	287	1200	4.0	21573	N23	E80	282	(AF)	3	H	10	1	HSX
80	07	6	16963	N24	E65	281	1000	4.0	21573	N23	E65	283	(AF)	3	H	10	2	BXO
80	07	7	16963	N24	E58	275	600	4.0	21573	N23	E50	285	(BF)	3	H	20	4	BXO
80	07	8	16963						21573	N23	E40	282	(B)	4	H	30	4	CRO
80	07	9	16963						21584	N27	E30	279	(AF)	3	H		1	AXX
80	07	9	16963						21573	N22	E28	281	(AP)	3	H		1	AXX
80	07	11	16963	N24	E07	275	1100	3.5		N24	E09				P	10	2	BXO
80	07	12	16963	N25	W07	274	1300	3.0	21591	N24	W03	273	(AF)	2				
80	07	13	16963	N25	W17	271	800	3.0										
80	07	14	16963	N24	W31	273	600	3.0	21599	N23	W27	270	(AP)	1				
80	07	15	16963	N24	W45	273	1000	3.0		N19	W51				B	10	1	AXX
80	07	16	16963	N24	W56	272	900	3.0		N19	W64				B	10	1	AXX
80	07	17	16963	N25	W70	272	1000	3.0										
80	07	18	16963	N24	W80	267	500	2.5										

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HALE REGION 16968 CMP DATE 12.5 RETURN OF REGION 16902 ROTATION 2

			CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	6	16968	S16	E68	278	600	2.0		S12	E70				H	150	1	HSX
80	07	7	16968	S20	E58	275	400	3.0										
80	07	9	16968						21585	S16	E34	275	(B)	3	H	220	5	DSO
80	07	10	16968						21585	S15	E21	274	(AP)	2	H	190	3	CSO
80	07	11	16968	S24	E10	272	700	3.0		S19	E09				P	10	3	BXO
80	07	12	16968	S24	W03	270	700	3.0		S19	W02				P		1	AXX
80	07	13	16968	S24	W18	272	300	2.5										
80	07	14	16968	S24	W28	270	300	2.5										
80	07	15	16968	S24	W42	270	600	2.0										
80	07	16	16968	S24	W55	271	400	2.0										
80	07	17	16968	S25	W62	264	400	2.5										

HALE REGION 16973 CMP DATE 12.9 RETURN OF NORTH PART OF REGION 16901 ROTATION 4

			CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	9	16973						21586	S04	E45	264	(BP)	4	H	20	5	CSO
80	07	10	16973						21586	S03	E30	265	(BY)	4	H	120	12	DAO
80	07	11	16973	S04	E16	266	600	3.0	21586	S03	E16	266	(BP)	3	H	20	1	HSX
80	07	12	16973	S04	E02	265	500	3.0	21586	S04	E02	268	(AP)	4	H	30	2	DSO
80	07	13	16973	S04	W12	266	400	3.0	21586	S05	W13	269	(AP)	3	H	20	2	AXX
80	07	14	16973	S04	W25	267	400	2.5	21586	S05	W25	268	(AP)	2	P	10	2	BXO
80	07	15	16973	S04	W37	265	600	2.5										
80	07	16	16973	S05	W50	266	400	2.0										
80	07	17	16973	S04	W63	265	400	2.5										

HALE REGION 16976 CMP DATE 13.8 RETURN OF EXTREME TRAILING EDGE REGION 16901 ROTATION 4

			CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	9	16976						21587	S15	E54	255	(AP)	2				
80	07	10	16976						21587	S15	E44	251	(AP)	3				
80	07	11	16976	S15	E27	255	100	3.0										
80	07	12	16976	S15	E14	253	100	3.0										

HALE REGION 16977 CMP DATE 15.1 RETURN OF REGION 16909 ROTATION 4

			CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	11	16977	S18	E44	238	400	3.0										
80	07	12	16977	S16	E32	235	600	3.0										
80	07	13	16977	S16	E18	236	500	3.0										
80	07	14	16977	S16	E05	237	400	2.5										
80	07	15	16977	S17	W06	234	600	2.5										
80	07	16	16977	S17	W18	234	500	2.5										
80	07	17	16977	S17	W34	236	500	3.0										
80	07	18	16977	S17	W48	235	300	2.5										
80	07	19	16977	S17	W61	235	300	2.0										

HALE REGION 16974 CMP DATE 15.5 FRONT HALF 16911&PARTS OF 16910&16906 ROTATIONS 3, 4 & 5

			CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	8	16974						21581	N17	E88	234	AP	2	H	60	1	HSX
80	07	9	16974						21581	N18	E74	235	(AP)	3	H	330	6	DSO
80	07	10	16974						21581	N19	E60	235	(BP)	5	H	340	11	ESO
80	07	11	16974	N18	E49	233	5100	4.0	21581	N17	E48	234	(BP)	4	H	350	11	ESO
80	07	12	16974	N18	E35	232	5000	4.0	21592	N24	E30	240	(AP)	3	B	10	1	AXX
80	07	12	16974	N18	E35	232	5000	4.0	21581	N18	E35	235	(BP)	5	H	210	6	DSO

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HALE REGION 16974 (CONT) CMP DATE 15.5 FRONT HALF 16911&PARTS OF 16910&16906 ROTATIONS 3, 4 & 5

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	13	16974	N18	E22	232	4800	3.5	21581	N18	E22	234	(BP)	5	H	80	2	CSO
80	07	13	16974	N18	E22	232	4800	3.5	21595	N08	E04	252	(AP)	2				
80	07	14	16974	N18	E08	234	3700	3.5	21581	N18	E10	233	(BP)	5	H	170	6	CSO
80	07	14	16974	N18	E08	234	3700	3.5	21595	N08	W10	253	(AP)	3				
80	07	15	16974	N18	W03	231	3700	3.5	21581	N18	W04	234	(BP)	5	H	160	12	CSO
80	07	16	16974	N18	W17	233	3400	3.5	21581	N18	W15	231	(B)	4	B	140	9	DSO
80	07	17	16974	N21	W31	233	3600	3.5	21581	N18	W30	233	(BP)	5	H	160	11	DSO
80	07	18	16974	N21	W45	232	3700	3.0	21581	N20	W40	230	(BP)	5	H	190	10	DSO
80	07	19	16974	N21	W55	229	3100	3.0	21581	N20	W54	231	(BP)	4	H	140	9	DSO
80	07	20	16974	N23	W65	227	1600	3.5	21581	N18	W70	233	(AP)	3	H	60	4	CSO
80	07	21	16974						21581	N19	W86	236	(AP)	2	H	140	1	HSX

HALE REGION 16975 CMP DATE 16.9 RETURN OF REAR HALF OF REGION 16911 ROTATION 3

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	11	16975	N17	E67	215	2000	3.5										
80	07	12	16975	N18	E52	215	3100	3.5		N21	E42				H	120	5	CSO
80	07	13	16975	N18	E40	214	3300	3.5		N20	E37				B	10	1	AXX
80	07	14	16975	N19	E28	214	2600	3.5										
80	07	15	16975	N20	E15	213	2700	3.5										
80	07	16	16975	N20	E03	213	2300	3.5										
80	07	17	16975	N22	W12	214	2300	3.5		N18	W08				R	20	2	AXX
80	07	18	16975	N21	W28	215	2000	3.0		N18	W21				R	30	10	BXO
80	07	19	16975	N20	W38	212	1800	3.0	21609	N19	W36	213	AP	1				
80	07	20	16975	N22	W49	211	2000	3.0										
80	07	21	16975	N22	W66	212	1600	3.0										
80	07	22	16975	N21	W72	209	600	3.0										

HALE REGION 16978 CMP DATE 17.3

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	11	16978	S13	E75	207	1300	4.5	21590	S15	E72	210	(BP)	3	H	510	8	DAI
80	07	12	16978	S13	E60	207	3000	5.0	21590	S13	E60	210	(D)	4	H	930	26	EKI
80	07	13	16978	S13	E47	207	3700	5.0	21590	S13	E47	209	(D)	5	H	1080	33	EKI
80	07	14	16978	S13	E35	207	2000	4.5	21590	S13	E35	208	(B)	5	H	850	42	EKI
80	07	15	16978	S13	E21	207	2700	4.0	21590	S12	E21	209	(B)	5	H	820	68	EKI
80	07	16	16978	S13	E06	210	3000	4.0	21590	S12	E09	207	(B)	5	B	640	57	EHI
80	07	17	16978	S12	W05	207	3000	4.0	21590	S12	W05	208	(BP)	5	H	700	51	EHI
80	07	18	16978	S12	W22	209	2500	3.5	21590	S12	W18	208	(BP)	6	H	610	36	EHI
80	07	19	16978	S12	W33	207	3200	3.0	21590	S12	W31	208	(BY)	5	H	570	21	EHI
80	07	20	16978	S12	W44	206	3000	3.5	21590	S12	W46	209	(BP)	4	H	540	21	EHI
80	07	21	16978	S12	W60	206	2300	3.5	21590	S10	W64	214	(AP)	4	H	390	9	CKO
80	07	22	16978	S12	W68	205	1300	3.0	21590	S11	W75	212	(AP)	3	H	150	2	HKX

HALE REGION 16980 CMP DATE 17.5 RETURN OF LEADING EDGE OF REGION 16917 ROTATION 3

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	12	16980	S24	E66	201	100	2.5										
80	07	13	16980	S25	E52	202	200	3.0										
80	07	14	16980	S26	E42	200	200	3.0	21600	S26	E45	198	(AP)	2				
80	07	15	16980	S25	E28	200	200	3.0										
80	07	16	16980	S24	E13	203	400	3.0	21604	S24	E10	206	(B)	3	B	10	3	BXO
80	07	17	16980	S23	W03	205	400	3.0	21604	S24	W03	206	(B)	3	H	50	3	DSO
80	07	18	16980	S23	W14	201	500	3.0	21604	S22	W16	206	(BP)	4	H	30	4	CSO
80	07	19	16980	S23	W25	199	500	3.0	21610	S25	W20	197	(AP)	2	R	10	1	AXX
80	07	19	16980	S23	W25	199	500	3.0	21604	S24	W29	206	(B)	4	H	20	1	HRX
80	07	20	16980	S23	W38	200	900	3.0	21604	S25	W42	205	(B)	3	H	40	2	CSO
80	07	20	16980	S23	W38	200	900	3.0	21610	S26	W35	198	(B)	3	H	60	10	DRO
80	07	21	16980	S23	W52	198	700	3.0	21610	S25	W50	200	(B)	3	H	50	4	BXO
80	07	21	16980	S23	W52	198	700	3.0	21604	S24	W58	208	(AP)	3	H	60	4	DRO

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HALE REGION 16980 (CONT) CMP DATE 17.5 RETURN OF LEADING EDGE OF REGION 16917 ROTATION 3

				CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	22	16980	S23 W62	199	700	3.0	21604	S22 W69	156	(AP)	3	H	270	19	EAO
80	07	22	16980	S23 W62	199	700	3.0	21610	S25 W64	201	(BY)	3	H	60	5	CRO
80	07	23	16980	S24 W70	193	200	3.0	21610	S26 W72	196	(AP)	3	H	50	2	BXO

HALE REGION 16982 CMP DATE 18.2 RETURN OF SMALL PART OF REGION 16917 ROTATION 3

				CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	13	16982	S21 E68	186	200	3.0									
80	07	14	16982	S18 E48	194	300	3.0									
80	07	15	16982	S18 E35	193	200	3.0									
80	07	16	16982	S19 E23	193	200	3.0		S14 E15				R	40	6	DRO
80	07	17	16982	S18 E06	196	200	2.5									

HALE REGION 16979 CMP DATE 18.5 RETURN OF NORTH HALF OF REGION 16918 ROTATION 3

				CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	12	16979	S14 E75	192	1100	4.0	21593	S12 E79	191	X	1	P	30	1	AXX
80	07	13	16979	S14 E60	194	3300	4.0	21593	S12 E66	190	(B)	4	H	60	6	CAO
80	07	13	16979	S14 E60	194	3300	4.0	21596	S17 E60	196	(AP)	2	B	150	4	CAO
80	07	14	16979	S13 E52	190	2500	3.5	21593	S12 E54	189	(BP)	4	H	120	9	CAO
80	07	15	16979	S12 E36	192	2000	4.0	21593	S12 E40	190	(BP)	4	H	60	8	CAO
80	07	16	16979	S12 E25	191	2600	4.0	21593	S10 E27	189	(BP)	3	B	30	19	BXI
80	07	17	16979	S12 E08	194	3100	3.5	21593	S10 E15	188	(B)	3	H	60	20	CSO
80	07	18	16979	S12 W05	192	2700	3.5	21593	S10 E02	188	(B)	3	H	10	4	BXO
80	07	19	16979	S12 W16	190	2500	3.0	21593	S11 W12	189	(B)	3	H	20	4	BXO
80	07	20	16979	S12 W30	192	2300	3.0									
80	07	21	16979	S12 W44	190	2100	3.0									
80	07	22	16979	S12 W52	189	1300	3.0									
80	07	23	16979	S12 W69	192	1000	3.0		S08 W66				H	10	2	BXO
80	07	24	16979	S10 W75	185	100	2.0									

HALE REGION 16995 CMP DATE 19.0

				CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	19	16995	N07 W10	184	200	3.0	21611	N06 W07	184	(B)	3	H	20	2	BXO
80	07	20	16995	N07 W22	184	300	3.5	21611	N06 W21	184	(B)	4	H	50	9	DRO
80	07	21	16995	N07 W37	183	300	3.0	21611	N07 W35	185	(B)	3	H	50	4	DSO
80	07	22	16995	N07 W46	183	300	3.0	21611	N07 W49	186	(AP)	4	H	50	6	CAO
80	07	23	16995	N07 W62	185	200	3.0	21611	N06 W63	187	(AP)	3	B	50	1	HRX
80	07	24	16995	N07 W74	184	200	2.0		N07 W74				H		1	AXX

HALE REGION 16990 CMP DATE 19.6

				CALCIUM PLAGE DATA						SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	16	16990	S07 E38	178	100	2.5		S10 E29				R	160	22	DAI
80	07	17	16990	S04 E25	177	100	2.0									
80	07	18	16990	S06 E09	178	100	3.0		S11 E02				H	10	4	BXO

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HALE REGION 16981 CMP DATE 19.9

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	13	16981	N17 E80	174	800	4.0	21597	N17 E82	174	X	2	H	60	3	CAO
80	07	14	16981	N16 E68	174	2500	3.5	21597	N18 E70	173	(B)	4	H	100	6	DAO
80	07	15	16981	N17 E57	171	3300	4.0	21597	N18 E58	172	(B)	4	H	200	8	DAO
80	07	16	16981	N17 E42	174	3400	4.0	21597	N19 E42	174	(BP)	4	B	170	18	DAI
80	07	17	16981	N17 E29	173	3200	4.0	21597	N18 E31	172	(BP)	4	H	180	8	DSO
80	07	18	16981	N17 E14	173	3300	3.5	21597	N18 E16	174	(BP)	5	H	130	2	CSO
80	07	19	16981	N17 E02	172	2500	3.5	21597	N18 E03	174	(BP)	4	H	130	4	CSO
80	07	20	16981	N17 W09	171	2200	3.5	21597	N18 W11	174	(BP)	4	H	130	5	CSO
80	07	21	16981	N20 W24	170	2200	3.5	21597	N19 W22	172	(BP)	4	H	150	9	DSO
80	07	22	16981	N18 W36	173	2200	3.5	21597	N18 W25	162	(BP)	5	H	70	9	DAO
80	07	23	16981	N18 W50	173	1900	3.5	21597	N16 W46	170	(BP)	4	H	60	2	CAO
80	07	24	16981	N18 W60	170	1600	3.0	21597	N18 W61	172	(AP)	4	H	60	1	HSX
80	07	25	16981	N18 W74	171	700	3.0	21597	N18 W74	171	(AP)	4	H	60	1	HSX
80	07	26	16981	N20 W85	168	300	2.5									

HALE REGION 16983 CMP DATE 20.2 NEW, IN LOCATION OF SOUTH PART OF 16918

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	13	16983	S26 E78	176	300	2.5	21598	S24 E80	176	X	2	H	250	1	HHX
80	07	14	16983	S26 E68	174	1600	3.5	21598	S25 E70	173	(AP)	4	H	250	1	HHX
80	07	15	16983	S25 E58	170	1800	3.5	21598	S25 E56	174	(BP)	5	H	400	3	CHO
80	07	16	16983	S25 E45	171	1500	4.0	21598	S24 E44	172	(D)	5	B	470	13	DKC
80	07	17	16983	S25 E31	171	1800	4.0	21598	S24 E34	169	(D)	5	H	750	12	DSI
80	07	18	16983	S24 E17	170	2400	4.0	21598	S24 E20	170	(BP)	5	H	550	11	DHO
80	07	19	16983	S24 E05	169	1800	3.5	21598	S25 E06	171	(D)	5	H	710	11	DHO
80	07	20	16983	S23 W08	170	1500	3.0	21598	S25 W06	169	(D)	5	H	520	8	DHO
80	07	21	16983	S24 W24	170	1500	3.5	21598	S26 W20	170	(AP)	4	H	630	15	DKO
80	07	22	16983	S25 W34	171	1000	3.0	21598	S25 W32	169	(BP)	5	H	670	15	DKI
80	07	23	16983	S25 W46	169	1200	3.0	21598	S31 W50	174	(BP)	5	R	410	32	DKI
80	07	24	16983	S26 W58	168	600	2.5	21598	S26 W58	169	(BP)	5	H	630	6	CHI
80	07	25	16983	S26 W70	167	700	2.5	21598	S28 W71	168	(BP)	4	H	450	2	DHO
80	07	26	16983					21598	S25 W89	173	AP	1	R	100	1	HSX

HALE REGION 16984 CMP DATE 20.5 RETURN OF SOUTH PART OF REGION 16921 ROTATION 3

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	14	16984	N06 E78	164	300	2.5									
80	07	15	16984	N06 E66	162	500	3.0	21601	N05 E69	161	(BP)	4	H	20	1	HRX
80	07	16	16984	N05 E55	161	600	3.0	21601	N05 E55	161	(AP)	3	B	30	2	HRX
80	07	17	16984	N05 E43	159	600	3.5	21601	N05 E42	161	(AP)	4	H	50	5	CSO
80	07	18	16984	N06 E26	161	1000	3.0	21601	N06 E28	162	(AP)	3	H	20	2	CSO
80	07	19	16984	N06 E12	162	400	3.0	21601	N05 E15	162	(AP)	3	H	10	1	AXX
80	07	20	16984	N06 W03	165	400	3.0	21601	N05 E02	161	(AP)	3	H	20	1	HRX
80	07	21	16984	N06 W17	163	300	3.0	21601	N04 W10	160	(B)	2	H	20	5	CRO
80	07	22	16984	N06 W26	163	500	3.0									
80	07	23	16984	N07 W48	171	200	2.5									

HALE REGION 16986 CMP DATE 21.0 RETURN OF SMALL PART OF REGION 16923 ROTATION 3

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	14	16986	S35 E77	165	300	3.0									
80	07	15	16986	S34 E68	160	300	3.0									
80	07	16	16986	S35 E48	168	300	2.5									
80	07	17	16986	S35 E36	166	300	2.5									
80	07	18	16986	S34 E28	159	300	3.0									
80	07	19	16986	S34 E18	156	200	3.0									
80	07	20	16986	S35 E03	159	200	2.5									

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HALE REGION 16991 CMP DATE 21.3 RETURN OF LOWER HALF OF REGION 16923 ROTATION 3

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	16	16991	S29 E61	155	1200	3.5									
80	07	17	16991	S28 E45	157	1500	3.5		S23 E35				R	510	13	DRC
80	07	18	16991	S28 E34	135	1800	3.5									
80	07	19	16991	S28 E21	153	1400	3.5	21612	S27 E23	154	(AF)	3	H	20	2	BXO
80	07	20	16991	S28 E07	155	1200	3.5	21612	S27 E08	155	(AF)	2				
80	07	21	16991	S27 W14	160	300	3.0	21612	S26 W05	155	B	2	H	20	6	BXO

HALE REGION 16987 CMP DATE 21.4 NEW, IN LOCATION OF REGION 16921

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	15	16987	N14 E75	153	800	3.5	21603	N13 E73	157	(B)	3	H	70	9	CRO
80	07	16	16987	N14 E60	156	1100	4.0	21603	N12 E60	156	(B)	3	B	90	22	DRI
80	07	17	16987	N14 E47	155	2100	4.0	21603	N13 E48	155	(BP)	4	H	150	21	DSO
80	07	18	16987	N14 E32	155	2300	4.0	21603	N13 E32	158	(BP)	4	H	180	18	CAI
80	07	19	16987	N14 E20	154	2200	3.5	21603	N14 E20	157	(B)	4	H	120	10	CAO
80	07	20	16987	N14 E08	154	2000	3.5	21603	N14 E07	156	(BP)	4	H	110	19	CAI
80	07	21	16987	N14 W07	153	1700	3.5	21603	N13 W08	158	(BP)	3	H	60	12	CSO
80	07	22	16987	N14 W18	155	1600	3.5	21603	N13 W21	158	(BP)	4	H	70	9	DAO
80	07	23	16987	N15 W33	156	1400	3.0	21603	N11 W31	155	(BP)	3	H	50	5	DAO
80	07	24	16987	N15 W45	155	1500	3.0	21603	N13 W47	158	(B)	3	H	10	4	BXO
80	07	25	16987	N16 W58	155	900	3.5	21603	N14 W59	156	(B)	2	H	20	3	BXO
80	07	26	16987	N16 W70	153	800	3.0		N16 W60				H	20	6	BXO

HALE REGION 16996 CMP DATE 21.4 RETURN OF PART OF REAR OF REGION 16921 ROTATION 3

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	19	16996	N07 E20	154	300	3.0		N05 E16				H	10	1	AXX
80	07	20	16996	N07 E07	155	200	2.0		N05 E02				H	20	1	HRX
80	07	21	16996	N07 W07	153	100	3.0		N05 W10				H	20	5	CRO
80	07	22	16996	N07 W18	155	100	2.5									

HALE REGION 16988 CMP DATE 21.6 RETURN OF REGION 16920 ROTATION 2

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	16	16988	N25 E68	148	200	3.0									
80	07	17	16988	N26 E52	150	500	3.5	21605	N22 E56	147	AP	1				
80	07	18	16988	N27 E35	152	1100	3.5	21605	N28 E39	151	(BP)	4	H	70	5	CSO
80	07	19	16988	N27 E24	150	1000	3.5	21605	N27 E27	150	(B)	4	H	100	9	DAO
80	07	20	16988	N27 E12	150	1300	3.5	21605	N26 E13	150	(B)	4	B	70	7	DSO
80	07	21	16988	N27 W04	150	1400	3.5	21605	N26 W02	152	(BP)	3	H	20	3	CAO
80	07	22	16988	N27 W14	151	1200	3.5		N26 W13				R	10	2	BXO
80	07	23	16988	N27 W27	150	1000	3.0									
80	07	24	16988	N27 W38	148	1100	3.0									
80	07	25	16988	N27 W52	149	600	3.0									
80	07	26	16988	N27 W63	146	500	3.0									
80	07	27	16988	N27 W76	146	500	3.0									

HALE REGION 16985 CMP DATE 21.7 PART OF 16922, ALL 16931, PART OF 16923 ROTATIONS 4 AND 3

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	14	16985	S23 E80	162	500	2.0		S23 E70				H	250	1	HHX
80	07	15	16985	S18 E71	157	1600	4.0	21602	S21 E71	159	BP	4	H	130	3	DHO
80	07	16	16985	S18 E65	151	3500	3.5	21602	S20 E60	156	(B)	4	B	210	16	ESO
80	07	17	16985	S20 E50	152	3800	4.0	21602	S20 E45	158	(BP)	4	H	440	10	ESO
80	07	18	16985	S20 E38	149	7000	4.0	21602	S20 E32	158	(BP)	4	H	490	20	EAO

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HALE REGION 16985 (CONT) CMP DATE 21.7 PART OF 16922, ALL 16931, PART OF 16923 ROTATIONS 4 AND 3

			CALCIUM PLAGE DATA							SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	19	16985	S20	E24	150	7100	3.5	21602	S20	E20	157	(D)	5	H	380	18	DKO
80	07	20	16985	S21	E13	149	6400	3.5	21602	S20	E07	156	(BY)	5	H	310	21	DKI
80	07	21	16985	S21	W03	149	6000	4.0	21602	S21	W07	157	(BP)	4	H	380	21	DKI
80	07	22	16985	S21	W13	150	6200	3.5	21602	S21	W20	157	(BP)	4	H	270	19	EAO
80	07	23	16985	S21	W25	148	6000	3.0	21617	S13	W37	161	(BP)	3	H	50	3	DAO
80	07	23	16985	S21	W25	148	6000	3.0	21602	S25	W36	160	(BP)	4	H	270	9	DAI
80	07	24	16985	S22	W57	167	5600	3.0	21617	S13	W48	159	(B)	3	H	40	3	CAO
80	07	24	16985	S22	W57	167	5600	3.0	21602	S21	W45	156	(AP)	4	H	250	8	DAI
80	07	25	16985	S23	W52	149	4600	3.0	21602	S21	W58	155	(AP)	4	H	250	3	DAO
80	07	25	16985	S23	W52	149	4600	3.0	21617	S14	W59	156	(BF)	3	H	20	1	HRX
80	07	26	16985	S25	W61	144	3400	3.0	21602	S21	W72	156	(AP)	4	H	140	2	CHO
80	07	27	16985	S22	W76	146	500	3.0		S23	W75				M	70	1	HRX

HALE REGION 16989 CMP DATE 22.9

			CALCIUM PLAGE DATA							SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	16	16989	N16	E78	138	500	3.5		N17	E80				B	10	1	AXX
80	07	17	16989	N16	E69	133	700	4.0	21606	N18	E68	135	B	2	H	30	3	CSO
80	07	18	16989	N17	E52	135	1600	4.0	21606	N17	E56	134	(B)	3	H	30	4	CSO
80	07	19	16989	N17	E42	132	1500	4.0	21606	N16	E42	135	(B)	3	H	20	5	BXO
80	07	20	16989	N17	E27	135	1700	3.5	21606	N17	E29	134	(B)	3	H	90	11	DAO
80	07	21	16989	N17	E13	133	1600	3.5	21606	N15	E15	135	(B)	3	H	90	24	DAI
80	07	22	16989	N17	E03	134	1400	3.5	21606	N16	E03	134	(B)	4	H	110	17	EAO
80	07	23	16989	N17	W13	136	1400	3.5	21606	N15	W10	134	(BP)	3	H	20	3	DAO
80	07	24	16989	N17	W25	135	1500	3.5	21606	N15	W28	139	(AP)	3	H	10	1	HSX
80	07	25	16989	N17	W39	136	1400	3.5	21606	N15	W42	139	(AP)	3	H	20	1	HRX
80	07	26	16989	N17	W53	136	1200	3.0	21606	N15	W61	145	(B)	2	H	20	6	BXO
80	07	27	16989	N17	W66	136	1100	3.0	21606	N15	W65	136	(B)	3	H	7140	6	CAO
80	07	28	16989	N17	W76	133	1000	3.0	21606	N14	W88	146	AP	2				

HALE REGION 16994 CMP DATE 22.9

			CALCIUM PLAGE DATA							SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	17	16994	S09	E65	137	500	3.0		S13	E74				B	200	1	HSX
80	07	18	16994	S09	E49	138	400	3.0										
80	07	19	16994	S09	E36	138	400	3.5										
80	07	20	16994	S09	E23	139	400	3.0										
80	07	21	16994	S09	E07	139	500	3.0										
80	07	22	16994	S08	E03	134	500	3.0		S12	E12				H	270	2	HHX
80	07	23	16994	S09	W15	138	200	3.0										
80	07	24	16994	S08	W28	138	400	2.5										
80	07	25	16994	S08	W43	140	300	3.0										
80	07	26	16994	S08	W59	142	200	2.0										
80	07	27	16994	S08	W72	142	200	2.5										

HALE REGION 16993 CMP DATE 23.9

			CALCIUM PLAGE DATA							SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	18	16993	N18	E68	119	300	2.5										
80	07	19	16993	N19	E56	138	600	2.5		N16	E45				H	20	5	BXO
80	07	20	16993	N19	E43	119	200	2.0										
80	07	21	16993	N19	E29	117	300	2.5										
80	07	22	16993	N19	E17	120	200	2.5										
80	07	23	16993	N19	E03	120	200	2.5										
80	07	24	16993	N19	W09	119	100	2.0		N15	W18				M	20	17	CRO

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HALE REGION 16992 CMP DATE 24.2 SOUTHERN HALF OF 16927, ALL OF 16928 ROTATIONS 3 AND 2

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	16	16992	S10	E78	138	300	2.0										
80	07	17	16992	S14	E77	125	300	3.0	21607	S13	E76	127	(AP)	3	H	240	2	CSO
80	07	18	16992	S16	E68	119	2500	3.5	21607	S13	E65	125	(BP)	4	H	200	2	DSO
80	07	18	16992	S16	E68	119	2500	3.5	21608	S11	E72	118	(AP)	3	H	200	2	DSO
80	07	19	16992	S16	E57	117	5200	4.0	21608	S19	E59	118	(AP)	4	H	250	9	DAO
80	07	19	16992	S16	E57	117	5200	4.0	21607	S13	E53	124	(AP)	5	H	230	2	DSO
80	07	20	16992	S18	E44	118	6600	4.0	21608	S19	E47	116	(D)	5	H	270	15	DAO
80	07	20	16992	S18	E44	118	6600	4.0	21607	S13	E39	124	(AP)	5	H	270	5	DSO
80	07	21	16992	S18	E28	118	6500	4.0	21607	S14	E24	126	(AP)	4	H	260	3	CHO
80	07	21	16992	S18	E28	118	6500	4.0	21608	S20	E31	119	(BP)	4	H	310	25	DKI
80	07	22	16992	S17	E18	119	6300	4.0	21608	S20	E20	117	(BP)	4	H	360	30	DKI
80	07	22	16992	S17	E18	119	6300	4.0	21607	S13	E13	124	(AP)	5	H	270	2	HHX
80	07	23	16992	S17	E07	116	5600	3.5	21608	S22	E02	122	(BP)	4	H	270	25	DAI
80	07	23	16992	S17	E07	116	5600	3.5	21607	S13	W03	127	(AP)	5	H	280	1	HHX
80	07	24	16992	S17	W07	117	5500	3.5	21607	S14	W14	125	(BP)	4	H	220	7	CHI
80	07	24	16992	S17	W07	117	5500	3.5	21608	S18	W06	117	(BP)	4	H	230	15	CAI
80	07	25	16992	S17	W18	115	4600	3.5	21607	S14	W27	124	(AP)	5	H	190	1	HSX
80	07	25	16992	S17	W18	115	4600	3.5	21608	S19	W20	117	(BP)	4	H	230	24	DAI
80	07	26	16992	S17	W32	115	4900	3.5	21608	S20	W33	117	(BP)	4	H	120	15	DAO
80	07	26	16992	S17	W32	115	4900	3.5	21607	S14	W40	124	(AP)	4	H	170	2	HHX
80	07	27	16992	S18	W45	115	4500	3.0	21608	S20	W43	114	(AP)	4	H	100	8	DAO
80	07	27	16992	S18	W45	115	4500	3.0	21607	S14	W54	125	(AP)	4	H	150	2	HAX
80	07	28	16992	S18	W59	116	2300	3.0	21607	S14	W67	125	(AP)	4	H	180	2	HHX
80	07	28	16992	S18	W59	116	2300	3.0	21608	S20	W61	119	(AP)	3	H	10	2	BXI
80	07	29	16992	S18	W69	113	2600	3.0	21608	S20	W75	120	AP	1	B		1	AXX
80	07	29	16992	S18	W69	113	2600	3.0	21607	S14	W79	124	AP	3	B	90	1	HSX
80	07	30	16992	S22	W73	103	700	2.5										

HALE REGION 16999 CMP DATE 24.8

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	19	16999	S09	E69	105	600	2.5	21613	S08	E68	109	(AP)	2	H	10	1	AXX
80	07	20	16999	S10	E55	107	700	3.0	21613	S08	E56	107	(B)	3	H	10	2	BXO
80	07	21	16999	S10	E39	107	600	3.0	21613	S08	E41	109	(AP)	3	H	10	2	BXO
80	07	22	16999	S09	E29	108	500	3.0	21613	S08	E27	110	(AP)	3	H	30	8	BXO
80	07	23	16999	S09	E16	107	500	3.0		S08	E16				R	10	1	AXX
80	07	24	16999	S09	E02	108	400	2.5										
80	07	25	16999	S09	W12	109	300	3.0		S08	W11				H	10	1	AXX
80	07	26	16999	S12	W12	95	200	2.5										

HALE REGION 16997 CMP DATE 25.3

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	19	16997	N23	E80	94	600	2.0										
80	07	20	16997	N22	E65	97	300	2.5		N20	E60				P	40	1	AXX
80	07	21	16997	N21	E46	100	600	2.5										
80	07	22	16997	N21	E37	100	500	2.5										
80	07	23	16997	N20	E24	99	400	3.0										
80	07	24	16997	N21	E12	98	500	3.0										
80	07	25	16997	N21	W05	102	500	3.0										
80	07	26	16997	N21	W15	98	500	2.5										
80	07	27	16997	N21	W30	100	400	3.0										
80	07	28	16997	N21	W42	99	600	3.0										
80	07	29	16997	N22	W54	98	300	2.5										
80	07	30	16997	N22	W77	107	300	2.5										

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HALE REGION 16998 CMP DATE 25.4 RETURN OF SOUTH PART OF REGION 16935 ROTATION 5

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT		MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	19	16998	N13 E75	99	600	3.0		21614	N12 E78	99	X	2	H	10	2	BXO
80	07	20	16998	N12 E62	100	500	3.5										
80	07	21	16998	N12 E46	100	600	3.0										
80	07	22	16998	N12 E36	101	500	3.0			N12 E36				P	10	2	BXO
80	07	23	16998	N12 E24	99	500	3.0										
80	07	24	16998	N12 E11	99	500	3.0		21619	N11 E11	100	(B)	3	H	10	2	BXO
80	07	25	16998	N12 W04	101	600	3.0		21619	N11 W03	100	(D)	4	H	140	5	DAO
80	07	26	16998	N12 W17	100	600	2.5		21619	N11 W15	99	(D)	3	H	100	6	DAO
80	07	27	16998	N12 W31	101	900	3.0		21619	N11 W28	99	(D)	3	H	90	6	DKC
80	07	28	16998	N13 W44	101	800	3.5		21619	N10 W43	101	(BP)	3	H	100	4	DAI
80	07	29	16998	N13 W56	100	600	3.5		21619	N10 W55	100	(B)	3	B	30	6	CAI
80	07	30	16998	N13 W71	101	400	3.0			N12 W69				B		1	AXX
80	07	31	16998	N10 W83	100	300	2.5										

HALE REGION 17000 CMP DATE 25.7

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT		MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	20	17000	S12 E67	95	300	2.5			S08 E57				H	10	2	BXO
80	07	21	17000	S13 E51	95	200	3.0			S08 E41				H	10	2	BXO
80	07	22	17000	S13 E42	95	400	2.5										
80	07	23	17000	S13 E27	96	100	2.5										
80	07	24	17000	S13 E14	96	200	2.5										

HALE REGION 17001 CMP DATE 26.3

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT		MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	21	17001	S33 E52	94	200	3.0										
80	07	22	17001	S33 E44	93	200	3.0			S32 E45				H	10	3	BXO
80	07	23	17001	S33 E30	93	300	2.5										
80	07	24	17001	S32 E18	92	200	2.5										
80	07	25	17001	S32 E07	90	200	3.0										
80	07	26	17001	S32 W06	89	100	3.0										
80	07	27	17001	S32 W24	94	300	3.0		21623	S33 W22	93	(BP)	3	H	40	4	CRO
80	07	28	17001	S32 W35	92	200	3.0		21623	S33 W35	93	(BP)	3	H	50	3	CSI
80	07	29	17001	S32 W46	90	200	2.5		21623	S33 W50	95	(AP)	3	B	40	2	HSX
80	07	30	17001	S32 W62	92	200	2.5		21623	S33 W63	94	AP	1	H	10	2	BXO
80	07	31	17001	S32 W70	87	100	2.5			S30 W65				M	10	2	BXO

HALE REGION 17018 CMP DATE 26.7

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT		MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	28	17018	S26 W27	84	100	2.5			S31 W35				B	70	3	CSO
80	07	29	17018	S26 W40	84	100	2.0		21628	S27 W41	86	(B)	3	B	30	2	CRO
80	07	30	17018	S27 W54	84	100	2.0		21628	S27 W52	83	AF	1	H	20	1	HAX

HALE REGION 17004 CMP DATE 27.3

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT		MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	22	17004	S33 E60	77	100	2.5		21615	S31 E60	77	(AP)	3	H		1	AXX
80	07	23	17004	S33 E47	76	200	3.0										
80	07	24	17004	S32 E34	76	100	2.5										
80	07	25	17004	S32 E22	75	100	2.5										
80	07	26	17004	S32 E07	76	100	2.5										
80	07	27	17004	S32 W06	76	100	2.5										

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HALE REGION 17006 CMP DATE 27.6 RETURN OF REGION 16937 ROTATION 5

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	23	17006	N27	E50	73	300	2.0										
80	07	24	17006	N27	E37	73	300	2.0										
80	07	25	17006	N27	E25	72	300	2.0										
80	07	26	17006	N27	E13	70	200	2.5										
80	07	27	17006	N27	W02	72	300	2.5										
80	07	28	17006	N27	W15	72	200	2.5										
80	07	29	17006	N27	W27	71	200	3.0										

HALE REGION 17003 CMP DATE 28.2 RETURN OF REGION 16939 ROTATION 2

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	22	17003	S16	E68	69	400	2.5										
80	07	23	17003	S18	E57	66	700	3.0										
80	07	24	17003	S18	E43	67	700	2.5										
80	07	25	17003	S21	E32	65	600	3.0										
80	07	26	17003	S21	E19	64	600	3.5		S23	E20				B		1	AXX
80	07	27	17003	S21	E06	64	400	3.0										
80	07	28	17003	S22	W08	65	400	3.0										
80	07	29	17003	S22	W20	64	400	2.5										
80	07	30	17003	S23	W36	66	200	2.5		S26	W43				P	10	1	AXX
80	07	31	17003	S23	W48	65	100	2.5										
80	08	1	17003	S23	W60	65	100	2.5										

HALE REGION 17005 CMP DATE 28.6

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	22	17005	S32	E70	67	100	3.0		S32	E62				H		1	AXX
80	07	23	17005	S32	E61	62	200	3.0										
80	07	24	17005	S33	E48	62	200	3.0										
80	07	25	17005	S33	E37	60	200	3.0										
80	07	26	17005	S33	E25	58	300	2.5										

HALE REGION 17002 CMP DATE 28.9

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	21	17002	N18	E82	64	300	2.5										
80	07	22	17002	N18	E78	59	400	3.0	21616	N20	E78	59	(AP)	3	H	30	4	DRO
80	07	23	17002	N18	E66	57	500	3.5	21616	N19	E70	54	(AP)	3	H	30	1	HSX
80	07	24	17002	N18	E50	60	1000	3.0	21616	N20	E55	56	(B)	3	H	60	3	CAO
80	07	25	17002	N19	E38	59	1200	3.5	21616	N20	E46	51	(AF)	3	H	50	3	CSO
80	07	26	17002	N19	E27	56	800	3.5	21616	N20	E33	51	(AF)	3	H	10	3	AXX
80	07	27	17002	N19	E11	59	1100	3.5		N18	E21				B	10	2	BXO
80	07	28	17002	N19	E02	55	800	3.5										
80	07	29	17002	N22	W13	57	600	3.0										
80	07	30	17002	N22	W26	56	600	3.0										
80	07	31	17002	N21	W39	56	500	3.0		N18	W47				M	60	7	CRO
80	08	1	17002	N21	W49	54	600	3.0										
80	08	2	17002	N21	W63	53	300	3.0										
80	08	3	17002	N23	W74	52	200	2.5										

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HALE REGION 17010 CMP DATE 29.8

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	25	17010	S23 E49	48	200	3.0									
80	07	26	17010	S23 E36	47	300	3.0									
80	07	27	17010	S23 E23	47	200	3.0									
80	07	28	17010	S23 E14	43	200	2.5									

HALE REGION 17008 CMP DATE 30.0 NEW REGION IN LOCATION OF REGION 16948

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	23	17008	S07 E79	44	500	3.5	21618	S03 E75	49	(AP)	3	H	240	1	HSX
80	07	24	17008	S07 E68	42	1200	4.0	21618	S07 E66	45	(BP)	4	H	250	1	HSX
80	07	25	17008	S07 E57	40	1700	4.0	21618	S07 E53	44	(BP)	4	H	390	6	CHO
80	07	26	17008	S07 E43	40	3000	4.5	21618	S07 E40	44	(BP)	4	H	230	12	CHO
80	07	27	17008	S07 E31	39	3000	3.5	21618	S08 E30	41	(BP)	4	H	250	18	CKO
80	07	28	17008	S07 E17	40	3100	3.5	21618	S08 E15	43	(B)	4	H	260	15	EKI
80	07	29	17008	S07 E04	40	2900	3.5	21618	S08 E03	42	(B)	4	B	160	22	EKO
80	07	30	17008	S07 W12	42	2300	3.5	21618	S08 W11	42	(BP)	4	H	80	3	CSO
80	07	31	17008	S07 W24	41	2400	3.5	21618	S09 W22	40	(BP)	4	H	100	8	CSO
80	08	1	17008	S07 W35	40	2100	3.5	21618	S05 W41	46	(AP)	4	H	60	4	CAO
80	08	2	17008	S07 W52	42	1500	3.0	21618	S04 W55	47	(AP)	4	H	60	1	HAX
80	08	3	17008	S07 W64	42	500	2.5	21618	S04 W68	46	(AP)	3	H	50	1	HAX
80	08	4	17008	S10 W75	40	400	2.0	21618	S05 W82	47	AP	2	B	20	1	HSX

HALE REGION 17009 CMP DATE 30.1 RETURN OF REGION 16946 ROTATION 2

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	24	17009	N13 E60	50	200	2.5		N18 E58				B	10	2	CSO
80	07	25	17009	N12 E52	45	300	2.5									
80	07	26	17009	N10 E38	45	200	2.5									
80	07	27	17009	N11 E25	45	300	3.0									
80	07	28	17009	N11 E16	41	300	3.0									
80	07	29	17009	N12 E05	39	200	3.0									
80	07	30	17009	N12 W09	39	200	3.0									
80	07	31	17009	N12 W22	39	100	3.0									
80	08	1	17009	N13 W34	39	200	3.0		N17 W30				P	20	1	HAX
80	08	2	17009	N13 W48	38	100	2.5		N18 W38				R	30	2	HRX
80	08	3	17009	N13 W62	40	100	2.5									
80	08	4	17009	N12 W75	40	100	2.5									

HALE REGION 17011 CMP DATE 30.3

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	24	17011	S27 E67	43	300	3.0									
80	07	25	17011	S27 E57	40	800	3.0									
80	07	26	17011	S28 E45	38	900	3.0									
80	07	27	17011	S29 E32	38	900	3.0									
80	07	28	17011	S29 E22	35	600	3.0									
80	07	29	17011	S29 E11	33	700	3.0									
80	07	30	17011	S29 W06	36	500	3.0									
80	07	31	17011	S29 W18	35	300	2.5									
80	08	1	17011	S29 W28	33	500	2.5									
80	08	2	17011	S29 W42	32	300	2.5									
80	08	3	17011	S29 W50	28	200	2.0									
80	08	4	17011	S30 W68	33	200	1.5									

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HALE REGION 17014 CMP DATE 30.3 NEW REGION IN LOCATION OF REGION 16945

			CALCIUM PLAGE DATA							SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	26	17014	N28	E44	39	300	3.5										
80	07	27	17014	N28	E33	37	300	3.5										
80	07	28	17014	N28	E22	35	400	3.0		N29	E31				P	80	5	EAO
80	07	29	17014	N28	E07	37	300	3.0										
80	07	30	17014	N28	W06	36	200	3.0		N27	W09				P	20	1	AXX
80	07	31	17014	N27	W19	36	300	3.0										
80	08	1	17014	N28	W30	35	300	3.0		N27	W20				H	30	1	HRX
80	08	2	17014	N28	W48	38	100	3.0		N24	W38				P	10	1	AXX

HALE REGION 17021 CMP DATE 30.9

			CALCIUM PLAGE DATA							SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	27	17021						21624	S10	E44	27	(AF)	3	H		1	AXX
80	07	28	17021	S08	E28	29	400	3.0	21624	S09	E29	29	AF	1	H	260	15	EKI
80	07	29	17021	S08	E16	28	200	3.0		S11	E18				B	20	1	AXX
80	07	30	17021	S08	E02	28	200	2.5										
80	07	31	17021	S08	W11	28	100	2.0		S08	W13				H	100	8	CSO
80	08	1	17021	S08	W24	29	300	3.0	21631	S08	W25	30	(B)	2	H	30	3	CRO
80	08	2	17021	S08	W38	28	200	2.5	21631	S07	W39	31	(B)	2	H	30	2	CAO
80	08	3	17021	S07	W53	31	200	2.5	21631	S07	W54	32	(BP)	2	H	20	4	CRO
80	08	4	17021	S08	W66	31	200	2.0		S09	W59				M	50	2	CRO
80	08	5	17021	S08	W80	32	100	2.5										

HALE REGION 17012 CMP DATE 31.1

			CALCIUM PLAGE DATA							SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	25	17012	N19	E72	25	100	2.0										
80	07	26	17012	N18	E57	26	200	3.5	21622	N17	E58	26	(AP)	3	H	30	5	BXO
80	07	27	17012	N17	E44	26	800	3.5	21622	N17	E44	27	(B)	4	H	90	12	CAO
80	07	28	17012	N18	E32	25	1100	3.5	21622	N18	E29	29	(BP)	4	H	110	7	CSO
80	07	29	17012	N18	E17	27	600	3.5	21622	N17	E17	28	(B)	4	B	80	7	DSO
80	07	30	17012	N18	E04	26	600	3.5	21622	N18	E03	28	(AP)	3	B	40	3	CSO
80	07	31	17012	N18	W12	29	700	3.5	21622	N20	W10	28	(B)	3	H	50	5	CRO
80	08	1	17012	N18	W25	30	400	3.0	21622	N20	W25	30	(AP)	3	H	40	3	CRO
80	08	2	17012	N18	W37	27	200	3.0	21622	N20	W38	30	(AP)	3	H	30	3	CSO
80	08	3	17012	N20	W50	28	200	3.0	21622	N21	W52	30	(AP)	3	H	20	2	BXO
80	08	4	17012	N19	W64	29	200	2.5		N24	W62				P		1	AXX
80	08	5	17012	N20	W75	27	200	2.5										

HALE REGION 17017 CMP DATE 31.5

			CALCIUM PLAGE DATA							SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	28	17017	N12	E36	21	300	3.5	21625	N11	E39	19	(B)	2	B	20	3	BXO
80	07	29	17017	N12	E25	19	200	3.0	21625	N11	E27	18	(B)	2	B	20	3	BXO
80	07	30	17017	N12	E10	20	200	3.0		N08	E04				H	30	6	CAO
80	07	31	17017	N12	W03	20	200	3.0		N12	W03				H	10	2	AXX
80	08	1	17017	N12	W15	20	200	2.5										

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HALE REGION 17033 CMP DATE 31.5

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	08	3	17033	N13	W42	20	100	3.0	21637	N13	W42	20	(B)	3	B	20	1	HRX
80	08	4	17033	N12	W56	21	200	3.5	21637	N12	W56	21	(B)	3	H	80	2	DSO
80	08	5	17033	N12	W68	20	400	3.0	21637	N11	W69	22	(BY)	3	H	80	4	DAO
80	08	6	17033	N12	W85	24	200	3.0	21637	N11	W85	25	AP	1	H	20	1	HSX

HALE REGION 17007 CMP DATE 31.6 RETURN OF REGION 16955 ROTATION 2

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	23	17007	N28	E79	44	200	2.0										
80	07	24	17007	N28	E74	36	700	3.5	21620	N27	E82	29	(X)	2	H	70	2	HSX
80	07	25	17007	N28	E71	26	2200	4.0	21621	N26	E58	39	AP)	3	H	10	1	AXX
80	07	25	17007	N28	E71	26	2200	4.0	21620	N27	E70	27	(AP)	4	H	60	2	HSX
80	07	26	17007	N28	E61	22	2100	4.0	21620	N27	E57	27	(BP)	4	H	60	3	CAO
80	07	27	17007	N27	E48	22	3900	4.0	21620	N27	E47	24	(BP)	4	H	80	6	CKO
80	07	28	17007	N27	E36	21	4200	4.0	21620	N28	E34	24	(BP)	4	H	90	2	CSI
80	07	29	17007	N28	E25	19	4000	4.0	21620	N27	E22	23	(B)	4	B	40	1	HAX
80	07	30	17007	N28	E09	21	4000	4.0	21620	N27	E09	22	(BP)	3	H	40	4	CAO
80	07	31	17007	N28	W02	19	4100	4.0	21620	N27	W09	27	(AP)	3	H	40	1	HSX
80	08	1	17007	N29	W11	16	3700	4.0	21620	N28	W19	24	(AP)	3	H	30	1	HRX
80	08	2	17007	N29	W24	14	3800	3.5	21620	N28	W33	25	(AP)	3	H	70	10	CSO
80	08	3	17007	N31	W37	15	2400	3.5	21620	N27	W46	24	(AP)	3	H	30	1	HSX
80	08	4	17007	N29	W50	15	2800	3.0	21620	N26	W60	25	(AP)	2	B		1	AXX
80	08	5	17007	N31	W59	11	2100	3.0										
80	08	6	17007	N31	W67	6	1700	3.0										
80	08	7	17007	N32	W76	1	800	3.0										
80	08	8	17007	N31	W83	355	100	3.0										

HALE REGION 17013 CMP DATE 31.6 RETURN OF LEADING PART OF REGION 16953 ROTATION 2

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	07	25	17013	S07	E77	20	200	3.0										
80	07	26	17013	S08	E65	18	900	3.0										
80	07	27	17013	S10	E52	18	600	3.0		S10	E45				H		1	AXX
80	07	28	17013	S11	E41	16	700	3.0		S08	E34				R	10	4	BXO
80	07	29	17013	S11	E26	18	600	3.0		S11	E18				B	20	1	AXX
80	07	30	17013	S11	E13	17	600	3.0		S12	E16				H	10	2	BXO
80	07	31	17013	S11	W02	19	500	3.0		S09	W09				M	40	4	BXO
80	08	1	17013	S11	W12	17	600	3.0		S08	W22				B		2	BXO
80	08	2	17013	S11	W27	17	500	3.0		S09	W37				H	30	2	CAO
80	08	3	17013	S11	W41	19	400	2.5		S06	W47				B	10	1	AXX
80	08	4	17013	S12	W52	17	300	2.5		S09	W59				M	50	2	CRO
80	08	5	17013	S12	W68	20	200	2.5										
80	08	6	17013	S16	W80	19	100	2.0										

DAILY CALCIUM PLAGE INDEX

JULY 1980

YR	MO	DAY	INDEX	YR	MO	DAY	INDEX	YR	MO	DAY	INDEX
80	7	1	*	80	7	11	36.3	80	7	21	90.2
80	7	2	38.5	80	7	12	46.4	80	7	22	78.3
80	7	3	37.4	80	7	13	52.1	80	7	23	60.5
80	7	4	32.4	80	7	14	45.5	80	7	24	51.6
80	7	5	32.6	80	7	15	60.1	80	7	25	47.9
80	7	6	29.1	80	7	16	69.7	80	7	26	48.1
80	7	7	25.6	80	7	17	82.7	80	7	27	46.2
80	7	8	*	80	7	18	95.5	80	7	28	46.0
80	7	9	*	80	7	19	95.3	80	7	29	40.4
80	7	10	*	80	7	20	96.2	80	7	30	37.2
								80	7	31	36.3

* NO OBSERVATIONS

NO CALCIUM SPECTROHELIOGRAMS WERE SECURED AT MT WILSON OBSERVATORY ON JULY 1, 8, 9, and 10, 1980.

CONTIGUOUS PLAGES JULY 1980: NONE

SUDDEN IONOSPHERIC DISTURBANCES

JULY 1980

DAY	UNIVERSAL TIME START	END	MAX	IMP	WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TYPE SWF	SCNA	SEA	SPA	LF-SPA	SES	SFD	KNOWN FLARE	HALE REGION
01	0252	0324	0300	1-	1				1				NF	
01	0625	0714	0632	1-	1				1				NF	
01	1626	1750	1634	3	5	3		5		1	4		1626	16943
02	0440	0524	0454	1-	3			1	1				*	
02	1026	1044	1038	1	3			2					*	
02	1544	1608	1555	1-	3			2		1			*	
02	1656	1751	1707	1-	1			2					NF	
03	0023	0025D	0025	1-	3	1			2				0022	16943
03	0135	0206	0138	1-	3	1			2				NF	
03	0254	0310	0258	1-	3	1			1				NF	
03	0416	0438	0421	1-	1				2				*	
04	0007	0114	0031	1-	3				2				*	
04	1335	1430	1348	1	3			3					*	
05	0014	0116	0027	1-	3				2				0015	16945
05	0153	0313	0210	1-	3	1			2				0156	16945
05	0340	0403	0347	1-	1				1				NF	
05	0736	0900	0748	3	5	4		6	2	1	2		0739E	16955
05	1545	1816	1614	2+	5	3		4		1	5		1550	16955
05	2233	0111	2249	3	5	2		4	2		1		2223	16955
06	0345	0404	0348	1	1	1							NF	
06	0419	0638	0449	2+	3	1			2				0422E	16955
06	0441E	0619	0450	2+	5	2		1	1	1			0447E	16955
06	1205	1300	1215	1-	1				1		1		NF	
06	1511	1546	1518	1-	1			1					1511	16955
07	0502	0620	0503U	2	1			1					NF	
07	0736	0900	0746	2-	1	1							NF	
07	1013	1100	1023	2+	5	2		1	1	1	3		*	
07	1101	1119D	1119	2+	5	1		1	1		4		NF	
07	1147	1225	1157	3	5	1		1		1	4		NF	
07	1357	1430	1407	1-	5	1		1		1	4		*	
07	1605	1715	1635	2	1			1					*	
07	1756	1840	1802	1-	3				1	1			*	
07	2113	2147	2119	1-	5					1	3		*	
07	2344	0016	2354	1-	3	1				1	1		*	
08	0050	0202	0102	1-	3				2				0051	16945
08	0300	0327	0304	1-	3	1			1		1		NF	
08	2008	2040	2017	1-	5				1		3		*	
08	2158	2234	2209	1-	1				1				*	
09	0004	0026	0026D	1-	1					1			NF	
09	0658	0724	0701	1-	3				2				NF	
09	0755	0840	0803	2+	3	1			1	1			NF	
09	1221	1250	1229	2+	5	1			2		5		1222	16952
09	1327	1415	1343	1-	1				1				1321	16952
09	1514	1542	1521	1	5				2		5		1516	16952
09	1937	2016	1944	1-	3				1		2		*	
09	2206	2227	2209	1-	1				1				2206E	16974
09	2350	0030	0008	1-	1				1				*	
10	0112	0214	0119	1-	3				2				*	
10	0239	0443	0319	1-	3				2				*	
10	0304E	0342	0320	1-	3	1			1				0305	16978
10	0618	0640	0627	1	5	1		1	1	1	1		*	
10	1105	1125	1109	1	5	1			1		2		1104	16975
10	1404	1435	1414	1	3	1			1		1		1404	16975
10	1518	1630	1540	2+	5	1		1	1				1510	16975
11	0623	0650	0640	1-	3	1		1	1				*	
11	0817	0845	0828	1-	3	1			1				*	
11	1014	1045	1026	1	1			2					*	
11	1053	1112	1059	2	5	1		1	1	1	2		1052	16978
11	1200	1235	1210	1	3	1		1	1	1			NF	
11	1255	1308D	1308	1-	5			1	1	1	5		1256	16978
11	1401	1500	1428	1-	5				1	1	3		1353	16978
11	1642	1735	1651	1-	5	3		3		1	5		1640	16978
11	1749	1753D	1753	2+	1				1				1743	16974
11	1854	2030	1906	2	5	1		1	1	1	3		1853	16978
11	1909	1929D	1929	1-	1				1				1908	16974
11	1955	2130	2009	2	1				1				1945	16978
11	2153	2316D	2218	2+	5				1		3		2153	16978
11	2211	2252	2220	1	1	1							NF	
11	2316E	2350	2322	1-	5	2			2				2318	16978

SUDDEN IONOSPHERIC DISTURBANCES

JULY 1980

	UNIVERSAL TIME				WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TYPE							KNOWN FLARE	HALE REGION
DAY	START	END	MAX	IMP		SWF	SCNA	SEA	SPA	LF-SPA	SES	SFD		
12	0009	0031D	0015	1-	1				1				NF	
12	0212	0330	0234	1-	5	2			1				NF	
12	1005	1032D	1032	2	5	1		1	2				NF	
12	1057	1107	1103	1-	5	1		2	1	1			1059E	16974
12	1111	1300	1128	2+	5	3		4	2		6		1110E	16977
12	1225	1232D	1232	1-	1				1		1		1225	16965
12	1342	1350D	1350	2+	5	2		2	1	1	3		1343	16965
12	1400	1422	1407	1	5	1			1	1	1		1400	16978
12	1543	1632	1553	1	5	1		5	2	1	5		1543	16978
12	1736	1755	1743	1-	5	1		1	1	1	3		1736	16978
12	1752	1822	1800	2				1					NF	
12	1825	2000	1836	1-	5				1	1	4		1823	16979
12	1924E	2010	1936	1	3						2		1923	16978
12	2044	2106	2050	1-	5				1		2		2044	16978
12	2232	2309	2246	1-	1				1				NF	
13	0113	0158	0118	1-	5	1			2				NF	
13	0555	0744	0610	1-	3				2				NF	
13	0627	0655	0638	1-	3				1	1			*	
13	1432	1455	1437	1-	5	1			1	1	4		1432	16978
13	1503	1545	1509	1	5	1		1	1	1	4		1451	16978
13	1718	1750	1728	2	5	1		2	2	1	3		1718	16978
13	1802	1845	1807	1-	5				1		5		1801	16978
13	1917	1953	1924	1-	5				2		4		1915	16978
13	2159	2226	2207	1-	3				1	2			2154	16978
14	0042	0112	0052	1-	1				1				NF	
14	0149	0246	0155	1-	3	1			2				0150	16978
14	0823	0907	0829	2	5	1		5	2	1			0822	16978
14	1220	1237	1227	1-	3					1	1		*	
14	1708	1815	1719	1	3						2		1708	16978
15	0132	0150	0135	1-	1				1				0129	16978
15	0332	0402D	0346	2	1	1							0332	16983
15	1611	1651	1626	1-	3			2					NF	
15	1827	1915	1837	1-	3				1		2		1827	16978
15	2248	2338	2256	1-	3				1		2		2243	16978
16	0043	0112	0049	1-	1				1				NF	
16	0638	0655	0644	1	3	1				1	1		NF	
16	2154	2237	2207	1-	1				1				2149	16992
17	0550	0817	0614	1-	5	1			2		1		NF	
17	0603	0645	0623	1-	5	1		2	1	1			0600E	16978
17	0956	1104U	0957D	1-	3			3					*	
17	1140	1224	1215	1-	3			3					*	
17	1335	1400	1345	1-	5	1			1	1	2		1332	16974
17	1514	1546	1522	1-	3			2					*	
17	2316	2352	2324	1-	1				1				NF	
18	0028	0100	0033	1-	1				1				NF	
18	0412	0431	0418	1-	1				1				*	
19	0006	0026	0014	1-	1				1				0008	16979
19	0237	0310	0240	1-	1				1				NF	
20	1925	2024	1937	1-	5				2		4		1924	16985
20	2257	0000	2306	1-	3				1		2		2254E	16978
21	0202	0228U	0205	1+	1	1							NF	
21	0247	0436	0301	2+	3	3			1				*	
21	1415	1445	1423	1-	1				1		1		NF	
22	0116	0155	0122	1-	3				2				NF	
22	0304	0335	0316	1-	3				2				NF	
22	0401	0446	0412	1-	3	1			1				NF	
22	0530	0612	0536	1-	3			1	1				NF	
22	2121	2134	2126	1-	1				1				*	
22	2250	2351	2305	1-	5				1		2		2255E	16985
23	0010	0030	0017	1-	1				1				*	
23	0054	0254	0107	2+	3	1			1		1		0052E	16992
23	0306E	0338	0314	1-	1				1				*	
23	1615	1634	1624	1	3			2					NF	
23	1659	1735	1705	1-	3						2		1700	16992
23	2004	2040	2010	1-	1				1				*	
23	2211	2300	2220	1-	3				1				2211	16992

SUDDEN IONOSPHERIC DISTURBANCES

JULY 1980

DAY	UNIVERSAL TIME START	END	MAX	IMP	WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TYPE SWF	SCNA	SEA	SPA	LF-SPA	SES	SFD	KNOWN FLARE	HALE REGION
24	0005	0027	0010	1-	1				1				NF	
24	0856	1020	0925	1	3	1		1	1	1			NF	
24	1140	1200	1145	1-	1				1				*	
25	1540	1628	1552	1-	5				1		4		1541	16985
25	2101	2146	2107	1-	5				1		3		*	
26	0118	0215D	0127	1	3				2				0117	17008
26	0215E	0247	0224	1-	1				1				NF	
26	1040	1100	1043	1-	3	1				1			*	
26	1308	1320	1311	1	5	1		1	1	1	4		1305E	17012
26	1442	1534	1450	1-	3			2					NF	
27	0440	0512	0445	1-	1				1				*	
27	0642	0706	0650	1-	1				1				0640	17008
28	0741	0820	0750	1-	1				1				0743	17008
29	0438	0526	0445	1-	3				2		1		NF	
30	1305	1430	1321	1-	3				2		1		*	

PERIODS OF NO OBSERVATIONS:

DATE	TIME (UT) AND STATION
07	1300-1700 PU

STATIONS REPORTING FOR JULY 1980:

Glenorchy, Tasmania, Australia	SWF	Panska Ves, Czechoslovakia	SWF, SEA, SES
Hiraiso, Japan	SWF	Preston, UK	SES
Inubo, Japan	SPA	Sao Paulo, Brasil	SPA, SES
Juliusruh, GDR	SWF	St. Cloud, Minnesota, USA	SES
Kasugai, Japan	SPA	Upice, Czechoslovakia	SEA
Kuhlungsborn, GDR	SEA, SPA	Vsetin, Czechoslovakia	SEA
Littleton, Colorado, USA	SES	Zilina, Czechoslovakia	SEA
Luchow, GFR	SWF		

SIDs BY HALE REGION

JULY 1980

DAY	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
REGION																															
16943	1		1																												
16945					2			1																							
16952									3																						
16955						3																									
16965												2																			
16974									1	2	1						1														
16975										3																					
16977												1																			
16978										1	8	5	6	3	3		1			1											
16979												1							1												
16983															1																
16985																				1		1			1						
16992																1							3								
17008																										1		1	1		
17012																										1					
NO FLARE	2	1	2		1	2	2	1	3		1	4	2		1	1	2	1	1		2	4	1	2		2		1			
NO FLARE PATROL		3	3	2			8	2	2	3	3		1		1			1			1	1	3	1	1	1	1			1	
EVENT TOTALS	1		1		2	3		1	4	4	10	10	6	3	4	1	2		1	2		1	3		1	2		1	1		

PIONEER XII
MAGNETIC FIELD MAGNITUDES
JULY 1980

DATE	TIME	BMAG
07/01/80	00:37:19	12.19
07/02/80	00:44:48	9.87
07/03/80	00:54:44	11.93
07/04/80		---
07/05/80	01:01:42	24.47
07/06/80	01:07:11	22.70
07/07/80	01:10:17	10.66
07/08/80	01:16:14	16.75
07/09/80	01:20:09:	7.01
07/10/80		---
07/11/80		---
07/12/80	01:33:23	10.60
07/13/80	01:36:17	8.37
07/14/80		---
07/15/80	01:46:59	6.02
07/16/80	01:47:19	9.01
07/17/80	01:49:42	9.53
07/18/80	01:54:33	9.41
07/19/80	01:59:43	10.16
07/20/80		---
07/21/80	02:04:33	9.25
07/22/80		---
07/23/80	02:09:17	12.89
07/24/80	02:13:30	9.79
07/25/80	02:15:16	16.63
07/26/80	02:23:07	9.36
07/27/80	02:22:18	12.26
07/28/80	02:26:24	12.01
07/29/80	02:26:44	11.56
07/30/80		---
07/31/80	02:32:51	7.70

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JULY 1980

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
01	0000	0735	CULG	0227.5	0228	2							IIIG
			CULG	0519			0519						IIIB,W
			CULG	0549	0659								IS,W
	1225	2245	HARV	1627	1635	3	1627	1635	3				IIIGG
			HARV				1628	1651	3			II	
			HARV	1628	1638	1	1628	1641	2			IV	
	0500	1820	DWIN	1628.6	1650.0	2						IV	
			HARV				1708		2	1708		2	IIIG
			HARV	1953		2	1953		2				IIIG
			HARV				2151	2152	1	2151	2152	1	IIIG,W
	2035	2400	CULG	2151	2151.5	1	2151	2151.5	1				IIIG
			PALE				2151.4	2151.8	1				V
			CULG	2346		1							IIIG
02	0000	0736	CULG				0109	0109.5	1				IIIG
			CULG				0234	0235	1				IIIG,U
			CULG				0253	0253.5	1				Z
			CULG				0340	0340.5					IIIG,W
			CULG	0459	0736								IS,W
			CULG	0506.5		1	0506.5	0508.5	2				IIIG,V
			CULG				0514	0736					IN,W
			CULG				0634.5		1				IIIB
	0500	1820	DWIN	0906.2	0906.5	2							IIIG
	1216	2245	HARV				1512	1640	1				IN
			HARV	1729	1731	3	1729	1731	3	1729	1731	3	IIIG
			HARV				1822	1823	2				IIIG
	2036	2057	CULG										
	2120	2400	CULG				2222.5	2225					IIIGG,W
			CULG				2246.5						IIIB,W
			CULG				2308						IIIB,W
03	0000	0736	CULG				0027.5		1				IIIB
			CULG				0113	0705					IIIN,W
			CULG				0343	0344	1				IIIG
			LEAR				0343.0	0343.5	1				V
	0500	1820	DWIN										
			CULG				0600.5		2				IIIB
			CULG				0612	0628	1				IIIN
			LEAR				0704.8	0705.1	1				III
			LEAR				0739.2	0739.6	1				III
	1216	2245	HARV				1252	1254	3				IIIGG,U
			HARV				1258	2200	1				IIIN
			HARV				1320	1634	1				IN
			HARV	1415		1							IIIB
			HARV				1737		2				IIIG
			HARV				1817		3	1817	1818	3	IIIG,V
			HARV				1830	1834	2	1830	1833	2	IIIG
			HARV				1839	1840	3	1839	1840	3	IIIG
			HARV				1856	1857	3				IIIG
			HARV				1902	1905	3	1903	1905	2	IIIG
			HARV	1907	1910	2	1907	1911	3	1908	1913	3	IIIGG,V
			SGMR				1909.6	1910.1	2				CONT
			HARV				1915		2	1915		2	IIIG
			HARV				2015	2016	2	2015	2016	2	IIIG
			HARV				2034	2035	1	2034	2035	1	IIIG
	2036	2400	CULG	2145	2149	1	2145	2155	1				IIIS
			HARV	2147	2148	2	2147	2148	3	2147	2148	2	IIIG
			CULG	2147	2147.5	2	2147	2147.5	3				IIIG,Z
			HARV				2158	2159	2	2158	2159	1	IIIG
			CULG	2158	2158.5	1	2158	2158.5	1				IIIG
			CULG				2209	2353					IIIN,W
			CULG	2229	2339								IN,W
04	0000	0710	CULG				0010	0031					IIIS,W
	0717	0736	CULG										
	1216	2245	HARV				1248	1437	1				IN
			HARV				1355	1358	2				IIIGG
	0500	1820	DWIN	1355.2	1355.3	1							IIIG
			DWIN	1356.5	1358.0	1						IV	
			HARV				1656	2237	1				IN

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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
04			HARV				2047	2048	1				IIIBW
	2036	2400	CULG				2206	2234					IIIN,W
05			LEAR				0015.4	0021.8	2				CONT
			PALE				0015.5	0021.9	3				V
	0000	0736	CULG	0015.5	0022	2	0015	0022.5	3	0015.5	0023	2	IIIGG
			CULG				0024.5		1				IIIB
			CULG				0048	0052					IIIG,W
			PALE				0151.9	0153.3	1				CONT
			CULG				0152	0152.5	2				UNCLF
			CULG				0152	0255					IIIS,W
			CULG				0152	0256					IS,W
			LEAR				0152.3	0430.0	1				B
			CULG	0152.5		2	0152.5		2				IIIB
			CULG				0153		1				IIIB
			CULG							0200	0220		SWF,W
			PALE				0201.9	0205.6	2				CONT
			CULG				0204	0250					IV,W
			CULG				0204	0215					CONT,SLO D
			CULG	0204.5	0205	1	0204	0205.5	2				IIIGG
			CULG				0342	0705					IIIN,W
			CULG				0520	0707					IS,W
			CULG				0540	0555	1				IIIS,RS
	0500	1830	DWIN	0735.0	0749.0	3						IV	Z
			LEAR				0735.9	0810.0	1				S
			DWIN	1101.0	1112.0	2						IV	
			SGMR				1404.2	1658.0	1				B
	1216	2334	HARV	1552	1558	2	1552	1559	2	1552		1	IIIGG
			DWIN	1556.1	1612.0	1						IV	
			HARV	1602	1605	1	1605	1611	2	1607	1610	2	IIIGG
			HARV				1607	1609	2				UNCL
			HARV	1609		1							IIIGW
			HARV	1622	1624	1							IIIGW
			HARV				1630		1				IIIG
			HARV				1709	1713	1	1709	1713	2	IIIG
			PALE				1735.5	1737.1	1				V
			HARV				1736		2	1736		2	IIIG
			DWIN	1827.3	1827.4	2							IIIG
			PALE				1834.5	1835.4	1				V
			HARV				1835	1837	2	1835	1837	2	IIIGG
			HARV				1854		3				IIIG
			HARV				1931		1				IIIB
	2036	2400	CULG	2123.5	2124								IIIG,W
			CULG				2153.5	2154.5					IIIG,W
			CULG				2154		1				IIIB
			HARV				2202		1				IIIGW
			CULG				2204						IIIB,W
			CULG				2205	2400					IS,W
			CULG				2213	2400					IIIN,W
			HARV				2217	2225	2	2223	2225	1	IIIGG
			CULG				2217	2223	1				IIIS
			CULG	2221	2223	1							IIIG
			CULG				2225	2256	2				IIIN
			CULG				2238	2400					IV,W
			CULG	2238	2253	3						IV	
			CULG	2238	2256	1							IIIS
			CULG	2238	2242.5	2	2235.5	2242.5	3	2234.5	2240.5	1	IIIGG
			HARV	2238	2242	1	2233	2244	3	2233	2242	3	IIIGG
			HARV	2238	2255	3	2243	2253	2			IV	
			SGMR				2239.0	2240.5	1				CONT
			CULG							2240	2330	2	SWF
			CULG				2244	2255	2			II	
			CULG				2246.5		3				IIIB
			CULG				2246.5	2249					N,RS,DP
			HARV				2248	2255	1			II	
			CULG	2250	2251	1	2250	2251	3				IIIGG
			HARV	2250	2251	2	2246	2255	3	2246	2255	3	IIIGG
06			CULG				0000	0705					IIIN,W
	0000	0736	CULG				0000	0030					IV,W

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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
06			CULG				0000	0201					IS,W
			CULG				0201	0710	1				IS,DC
			CULG	0204	0501								IS,W
			CULG	0241	0241.5	1	0241	0241.5	1				IIIG
			CULG	0418	0424	2	0420	0500	1			IV	
			LEAR				0418.8	0422.8	2				CONT
			CULG	0419	0423	2	0418.5	0423	3	0419.5	0421	2	IIIGG
			PALE				0419.6	0421.5	2				V
			CULG				0429.5	0457	1				POSS II
			LEAR				0438.1	0447.6	1			IV	
			PALE				0438.5	0444.2	1				CONT
			CULG	0442	0448	3						IV	
	0440	1345	DWIN	0442.0	0448.0	2							IVP
			CULG							0445	0500	1	SWF
			CULG	0445.5	0447.5	2	0438	0447	3				IIIGG
			CULG				0449.5	0451	1				N,DP
			LEAR				0449.9	0457.5	1				CONT
			CULG				0450		3				IIIB
			CULG	0612	0613	1	0612	0612.5	1				IIIG
			DWIN	0612.2	0617.7	2							IIIGG
			LEAR				0612.5	0616.0	1				CONT
			CULG	0614.5	0618	1	0614.5	0618	2				IIIGG
			CULG				0654	0654.5	2				IIIG
			LEAR				0654.0	0704.5	1				S
			CULG	0655	0656	2	0655	0656	2				IIIG
	1216	2250	HARV	1230		2							IIIG
			SGMR				1804.0	2006.5	1				B
			HARV				1842		1				IIIGW
			HARV				1846		1	1846		1	IIIGW
			HARV				1854	1855	1	1854	1855	1	IIIGW
			HARV	2014	2019	3	2014	2019	3	2014		1	IIIG
			PALE				2014.1	2014.8	1				III
			PALE				2255.8	0415.0	1				B
			PALE				2330.2	2332.9	1				CONT
	2036	2400	CULG				2330.5	2331.5					IIIG,W
07	0000	0737	CULG				0146.5						IIIB,W
			CULG				0229.5		1				IIIB
			CULG	0245.5			0245.5						IIIB,W
			CULG	0246.5			0246.5						IIIB,W
			CULG	0456.5		1	0456.5		1				IIIB
			CULG				0509	0538					IIIN,W
			CULG				0559		1				IIIB
			LEAR				0802.0	0802.2	1				III
	0623	1800	DWIN	0949.5	0950.0	2							IIIG
			DWIN	1141.8	1142.6	2							IIIG
			DWIN	1150.8	1151.3	1							IIIG
	1216	2245	HARV				1232	2242	2				IIIN
			HARV				1354	2245	2				I
			HARV				1355	1358	3	1358		2	IIIGG
			DWIN	1512.9	1513.2	2							IIIG
			HARV	1513	1624	2							IIIN
			HARV				1614	1621	3	1615	1616	2	IIIGG
			HARV				1711	1713	3	1711	1713	3	IIIG
			HARV				1743	1759	3	1743	1754	2	IIIGG
			HARV	1753	1758	3							IIIGG
			DWIN	1756.6	1800.0	2							IIIGG
			HARV				1814	1815	2	1814	1815	2	IIIG
			HARV				1817		3				IIIG
			HARV				1836		3	1836		2	IIIG
			PALE				1836.0	1836.2	1				III
			HARV				1850	1851	2	1850	1851	2	IIIG
			PALE				1850.5	1850.8	1				III
			PALE				1918.5	1919.9	2				CONT
			HARV				1919	1920	3	1919	1920	3	IIIG
			PALE				1934.5	1934.6	1				III
			PALE				2012.9	2016.0	2				V
			HARV				2013	2016	2	2013	2016	2	IIIGG
	2037	2400	CULG				2057	2057.5					UNCLF
			HARV				2057		3	2057		3	IIIG

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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
07			PALE				2057.2	2057.6	2				III
			CULG	2103	2130	1							IS
			CULG	2104		2	2104		1				IIIB
			HARV				2104	2105	3				IIIG
			CULG				2126	2400					IIIN,W
			CULG	2130	2400								IS,W
			PALE				2137.5	2145.4	2				CONT
			CULG				2137.5	2138	2				IIIG
			HARV				2138		3	2138		3	IIIG
			HARV				2145	2146	3	2145		3	IIIG
			CULG				2145	2145.5	3				IIIG
			CULG				2214.5		1				IIIB
			PALE				2214.9	2217.4	1				V
			CULG				2217		2				IIIB
			CULG				2246.5	2247.5	3				IIIG,U
			PALE				2246.7	2247.9	2				V
			CULG	2253	2253.5	3							IIIG
			CULG	2326.5	2327	1							IIIG
			PALE				2350.3	2351.2	2				V
			CULG	2350.5	2351	1	2350.5	2351	2	2350.5	2351	2	IIIG
			LEAR				2350.7	2351.1	1				III
			CULG	2353	2353.5	3							IIIG
08	0000	0737	CULG	0000	0737								IS,W
			CULG				0001	0005					I,W
			CULG				0007	0737					IIIN,W
			CULG	0051	0051.5	2	0051	0051.5	1	0051		1	IIIG,Z
			LEAR				0051.2	0053.3	1				CONT
			PALE				0051.2	0053.2	1				CONT
			CULG	0052	0053	2	0052	0053.5	1	0053	0053.5	1	IIIGG,Z
			CULG				0101.5		1				IIIB
			LEAR				0112.5	0112.9	1				CONT
			CULG				0142.5	0143	2				IIIB
			PALE				0142.5	0142.9	2				V
			CULG				0154		1				IIIB
			CULG	0239.5	0240	2	0239.5	0240.5	3	0240	0240.5	1	IIIG
			LEAR				0239.8	0300.9	1				S
			PALE				0239.9	0240.7	2				V
			CULG				0259		2				IIIB
			CULG	0408	0409	2	0408	0409	2				IIIG
			CULG	0412.5	0413	1							IIIG
			CULG				0414.5		2				IIIB
			LEAR				0414.8	0423.0	1				CONT
			CULG				0422	0423	2				IIIG
			CULG				0536.5	0537	1				IIIG
			LEAR				0536.6	0536.9	1				III
	0500	1815	DWIN	0622.0	0622.6	1							IIIG
			DWIN	1010.0	1010.3	2							IIIG
			DWIN	1056.1	1056.2	3							IIIG
	1217	2245	HARV				1222	2243	2				I
			HARV				1419	2152	2	1419	2152	2	IIIN
			HARV				1535		2	1535		2	IIIG
			HARV	1617	1622	3							IIIG
			DWIN	1621.9		1							IIIB
			PALE				1652.9	1653.2	1				III
			HARV				1653		3	1653		3	IIIG
			HARV				1703	1708	2	1703	1708	2	IIIG
			HARV				1715		3	1715		3	IIIG
			HARV				1720		2	1720		2	IIIG
			HARV				1804	1808	3	1804	1808	3	IIIG,V
			HARV				1817	1822	3	1817	1822	3	IIIG
			PALE				1838.7	1840.2	3				V
			HARV				1839	1840	3	1839	1840	3	IIIG,V
			PALE				1845.7	1847.0	3				V
			HARV				1846	1859	3	1846	1859	3	IIIGG
			PALE				1848.0	1905.8	2				CONT
			HARV				1905	1907	3	1905	1907	3	IIIG
			PALE				1905.4	1907.7	2				III
			PALE				1920.5	1921.6	3				V
			HARV				1921		3	1921		3	IIIG

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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
08			PALE				1926.6	1927.3	3				III
			HARV	1927	1934	3	1926	1934	3	1926	1934	3	IIIGG
			PALE				1927.9	1950.5	2				S
			HARV				1948	1950	2	1948	1950	2	IIIG
			PALE				2008.8	2017.2	3				V
			HARV	2009	2015	2	2001	2017	3	2001	2017	3	IIIGG
			PALE				2057.9	2107.2	3				CONT
	2037	2400	CULG				2058	2400	2				IIIN
			HARV	2058	2059	3	2058	2106	3	2058	2106	3	IIIGG
			CULG	2103	2103.5	1	2103	2103.5	2				IIIG
			CULG	2104	2400		2107	2400					IS,W
			CULG				2105	2400					IIIN,W
			CULG				2130	2131.5	1				IIIG
			PALE				2130.8	2230.8	1				S
			CULG	2131	2400								IIIN,W
			PALE				2151.0	2153.0	2				V
			CULG	2158	2158.5	2							SLOW DRIFT
			CULG	2205.5	2207	2							SLOW DRIFT
			CULG				2220.5	2221	3				IIIB,V
			PALE				2220.9	2221.3	2				V
			HARV				2221		2	2221		2	IIIG
			HARV				2231	2232	2	2231	2232	2	IIIG
			CULG				2231	2232.5	3				IIIG,V
			PALE				2231.2	2232.6	3				V
			CULG	2237	2237.5	2							IIIG
			HARV	2237		3	2237	2238	3	2238		2	IIIG
			CULG				2237.5	2238	3				IIIB,V
			PALE				2237.8	2238.1	2				V
			CULG	2249	2249.5	1							DCIM
			LEAR				2350.7	2351.1	1				III
09	0000	0620	CULG				0000	0615					IIIN,W
			CULG				0000	0620					IS,W
			LEAR				0000.1	0049.7	1				S
			CULG	0001.5	0012	2							IIIG
			CULG	0005	0006	1							DCIM
			CULG	0006.5	0007	1	0006.5	0007	2				IIIG
			CULG				0018	0615	2	0018	0325	1	IIIN
			LEAR				0030.0	0049.7	1				S
			PALE				0033.0	0033.1	1				V
			CULG				0039	0039.5	3	0039	0039.5	3	IIIB
			PALE				0039.0	0039.7	2				V
			PALE				0042.0	0044.0	1				CONT
			PALE				0044.6	0046.2	2				V
			PALE				0048.2	0049.9	2				V
			CULG				0049	0049.5	3	0049.5	0050	2	IIIG
			CULG	0111	0112	3	0111	0112	1				IIIG
			CULG	0145.5	0146	1							DCIM
			CULG	0214.5	0216	3	0214.5	0215.5	2				IIIG
			LEAR				0214.9	0215.6	1				V
			PALE				0214.9	0215.5	1				III
			CULG	0215	0216.5								DCIM
			LEAR				0310.8	0404.1	1				S
			PALE				0310.9	0410.9	1				S
			LEAR				0316.0	0404.1	1				S
			CULG				0404		2	0404	0404.5	2	IIIB
			LEAR				0501.2	0501.4	1				III
			CULG				0529	0531.5	2				IIIG
			CULG				0535	0536	2				IIIB,V
			LEAR				0556.5	0627.3	1				S
			CULG				0611.5	0612	3				IIIG
			LEAR				0611.9	0612.1	2				III
			LEAR				0658.1	0700.6	1				V
	0500	1815	DWIN	0658.2	0659.6	2							IIIG
			LEAR				0757.7	0759.6	2				V
			LEAR				0837.1	0837.3	1				III
			DWIN	1010.5		2							IIIB
			DWIN	1059.3	1059.6	1							IIIG
	1216	2245	HARV				1222	2245	1				IN
			HARV	1337	1340	3							IIIG

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DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
09			HARV				1421	2132	1	1536	2132	1	IIIN
			HARV	1514	1518	3	1514	1519	3	1516	1519	2	IIIGG,U
			DWIN	1514.4	1517.8	2						IV	
			HARV				1524	1533	2				UNCL
			HARV				1525	1526	2	1525	1526	2	IIIG
			HARV				1616	1617	2	1616	1617	2	IIIG
			HARV				1624	1628	2	1624	1628	2	IIIG
			HARV				1632	1636	2	1632	1636	2	IIIG
			HARV				1657	1702	3	1657	1702	3	IIIGG,V
			PALE				1658.2	1746.4	1				S
			HARV				1713		2	1713		2	IIIG
			HARV				1741	1747	2	1741	1747	2	IIIG
			PALE				1801.3	1831.3	1				S
			HARV				1802	1803	2	1802	1803	2	IIIG
			HARV				1827	1832	2	1827	1832	2	IIIG
			HARV				1902	1908	3	1902	1908	3	IIIG,V
			PALE				1902.4	1906.6	3				V
			PALE				1907.3	1936.4	1				S
			HARV				1924		3	1924		3	IIIG,V
			HARV				1931	1936	3	1931	1936	3	IIIG
			HARV				2006	2016	2	2006	2016	2	IIIG
			PALE				2006.6	2053.1	1				S
			HARV				2026		2	2026		2	IIIG
			HARV				2045	2052	2	2045	2052	2	IIIG
			PALE				2105.9	2132.3	1				S
	2039	2400	CULG				2112.5	2114	1				IIIGG
			HARV				2113	2114	2	2113		2	IIIG
			CULG				2115	2400	1				IIIN
			CULG	2157	2158	1							DCIM
			HARV	2157	2158	3							IIIG
			CULG	2202	2400								IN,W
			CULG				2203.5	2207.5	3				IIIGG,V,U
			PALE				2203.9	2210.0	3				CONT
			HARV				2204	2206	3	2204	2206	3	IIIG,V
			CULG				2208.5	2211	2				IIIGG,U
			PALE				2253.3	2253.7	1				V
			CULG				2253.5		2				IIIB
			PALE				2322.5	2347.0	2				S
			CULG				2324		2				IIIB
			CULG				2345	2347	2				IIIG
			LEAR				2346.4	2346.6	1				III
10	0000	0738	CULG	0000	0711								IN,W
			CULG				0006	0624	1				IIIN
			CULG				0034		2				IIIB,U
			PALE				0111.8	0115.1	3				V
			CULG	0112	0112.5	1	0112	0115.5	3	0112	0114	2	IIIG,V,Z
			LEAR				0112.0	0115.1	2				V
			CULG	0150.5	0151	2	0150.5		1				IIIG
			CULG	0227	0623								IIIN,W
			LEAR				0256.4	0308.6	1				S
			CULG				0259	0259.5	3	0259	0259.5	2	IIIB
			PALE				0259.0	0259.9	2				V
			PALE				0307.0	0308.1	2				III
			CULG				0307.5	0308	3	0307.5	0308	2	IIIB
			CULG				0317.5		2				IIIB
			PALE				0342.4	0357.1	1				S
			CULG	0356	0357	1	0356	0357	2	0356	0357	2	IIIG
			LEAR				0356.1	0357.1	1				V
			CULG				0410.5	0411	2				Z
			CULG				0423.5		2				IIIB,Z
			LEAR				0423.5	0500.2	1				S
			CULG				0426.5		2				IIIB,Z
			CULG				0440	0646	1				IS
			CULG	0501	0503	1							IIIG
			CULG	0506	0507	1							IIIG
	0510	1820	DWIN	0618.2	0618.8	2							IIIG
			CULG				0626	0626.5	2				IIIB,Z
			LEAR				0919.3	0920.3	1				V
			DWIN	0943.4	0943.8	2							IIIG

SOLAR RADIO EMISSION
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JULY 1980

DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
10	1217	2245	HARV				1229	2245	1				IN
			HARV				1406	2224	2				IIIN
			HARV	1426	1427	3	1426	1427	3	1426	1427	2	IIIGG,U
			DWIN	1426.0	1426.1	2							IIIG
			DWIN	1549.8	1550.0	1							IIIG
			HARV	1550	1554	3	1550	1554	3				IIIGG
			HARV							1629	2045	2	IIIN
			PALE				1736.9	1738.7	3				CONT
			HARV				1737	1740	3	1737	1740	3	IIIGG,V
			PALE				1901.9	1902.6	1				III
			HARV				1902		2	1902		2	IIIG
			PALE				193[illegible].6	1931.0	2				III
			HARV				1931		2	1931		2	IIIG
			HARV	1956	2224	2							IIIN
			PALE				2045.5	2049.2	1				CONT
			HARV				2048		2	2048		2	IIIG
	2038	2400	CULG	2104	2400		2107	2310					IS,W
			CULG	2125	2250	1							IIIN
			CULG				2129.5	2131	1				IIIG
			CULG	2248	2249.5	2							IIIG
			CULG				2302	2303					IIIG,W
			CULG				2334.5						IIIB,W
11	0000	0737	CULG	0000	0640								IS,W
			CULG				0000	0705					IIIN,W
			CULG				0016	0017	2				IIIGG,Z
			LEAR				0016.5	0039.7	1				S
			CULG				0039.5	0040.5	2				IIIG,U,Z
			PALE				0045.2	0017.7	1				CONT
			LEAR				0141.3	0141.7	1				V
			CULG				0141.5		2	0141.5		2	IIIB
			CULG	0212	0238	1							IIIN
			CULG				0217	0236	1				IN
			LEAR				0244.3	0244.9	1				CONT
			LEAR				0329.9	0330.9	1				V
			CULG				0330		1				IIIB
	0500	0945	DWIN										
			LEAR				0508.9	0509.2	1				V
			CULG	0509		1	0509		2				IIIB
			CULG	0531.5	0532	2	0531.5	0533	2				IIIG,Z
			LEAR				0614.2	0614.4	1				CONT
			CULG	0620	0630	1	0620	0621	1				IIIS
			CULG				0626.5	0627.5	1				IIIG
			CULG				0634		2				IIIB
			LEAR				0634.0	0634.5	1				V
			LEAR				0702.7	0703.4	1				CONT
			LEAR				0709.5	0711.9	1				CONT
	1226	2245	HARV				1230	2220	1				IN
			HARV				1251	2155	2				IIIN
			HARV				1256		2	1256		2	IIIG
			HARV				1401	1402	2	1401	1402	1	IIIG
			HARV				1410		2	1410		2	IIIG
	1415	1810	DWIN										
			HARV				1513	1514	3	1513	1514	2	IIIG
			HARV				1518		3	1518		2	IIIG
			HARV				1832	1843	2				IIIS
			HARV				1851	1853	2	1851	1853	2	IIIG
			PALE				1851.4	1852.6	1				V
			PALE				1857.7	1859.9	3				V
			HARV	1858	1901	3	1858	1901	3	1858	1900	3	IIIGG
			HARV	1908	1910	3	1908	1910	3				IIIG
			HARV				1918		2	1918		2	IIIB
			HARV				1930	1932	2	1930	1932	2	IIIG
	2038	2400	CULG				2132	2237					IIIN,W
			PALE				2143.7	2144.1	2				III
			HARV				2144		2	2144		2	IIIB
			CULG				2144		2				IIIB
			CULG				2155	2155.5	2				IIIG
			CULG				2208	2213	2				SLOW DRIFT
			CULG				2208	2213	2				IIIGG,V

SOLAR RADIO EMISSION
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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
11			PALE				2208.1	2219.4	3				V
			HARV				2209	2212	1	2209	2212	1	IIIG
			HARV				2216	2217	3	2216	2217	2	IIIGG
			CULG	2216	2217	2	2215	2218	3				IIIGG,V
			CULG				2218	2218.5	2				UNCLF
12	0000	0737	CULG				0011	0015	1				IIIGG
			CULG	0105	0559		0215	0230					IN,W
			CULG	0224.5	0225	1							IIIG
			CULG				0311	0650					IIIN,W
			LEAR				0319.0	0631.5	1				B
			CULG				0347.5	0348	1				UNCLF
	0500	1825	DWIN										
			CULG				0509.5	0510.5	2				IIIG
	1231	2245	HARV				1236	2133	2	1533	2052	2	IIIN
			HARV				1304	2104	1				IN
			HARV				1731	1732	2	1731	1732	2	IIIG
			HARV				1822	1824	2	1822	1824	2	IIIGG
			PALE				1822.1	1825.1	1				CONT
			HARV				2016	2017	2	2016	2017	2	IIIG
			PALE				2016.5	2016.7	1				III
	2038	2400	CULG	2104	2110								I
			CULG				2115	2400					IIIN,W
			CULG				2133		1				IIIB
			CULG				2252		1				IIIB
			CULG				2319.5		1				DP
13	0000	0737	CULG				0000	0659					IIIN,W
			LEAR				0217.0	0229.2	1				S
			CULG	0223	0715								IS,W
	0500	1345	DWIN										
			CULG				0648	0648.5	1				IIIG
			LEAR				0648.0	0648.5	1				V
			LEAR				0808.0	0838.5	1				B
	1232	2345	HARV	1909	1931	2							IIIN
	2038	2400	CULG				2115	2400					IIIS,W
			CULG				2121	2333	1				N,RS,DP
			CULG				2304.5	2305	1				IIIG
14	0000	0715	CULG				0000	0549					IIIS,W
			CULG	0124	0648		0120	0715					IN,W
			CULG				0126		1				IIIB,Z
			LEAR				0126.1	0126.3	1				III
			PALE				0126.2	0126.3	1				III
			LEAR				0135.0	0937.0	1				B
			CULG				0549	0715	1				IIIS
			CULG				0559.5	0600	2				IIIB,V
			CULG				0620	0711	1				N,RS,DP
	0615	1815	DWIN	0646.7	0647.8	1							IIIG
			DWIN	0822.9	0827.5	2							IIIG
	1231	2245	HARV				1232	2245	2				I
			HARV							1704	2240	2	IIIS
			HARV				1704	2240	2				IIIN
			HARV	2215	2216	2	2215	2216	2				IIIG
15			CULG				0100	0715	1				IS
			CULG				0100	0738	1				IIIN
	0100	0738	CULG	0100	0705								IS,W
			CULG	0105	0608		0109	0655					IIIS,W
			LEAR				0124.0	0938.0	1				B
			CULG				0136.5	0138	2				IIIG,V,Z
			PALE				0136.8	0138.4	1				CONT
			CULG				0501.5	0503	2				IIIG,V
			CULG				0618	0710	1				SCINT
	0450	1815	DWIN	0845.0	0845.5	2							IIIG
			DWIN	0953.1	0953.6	2							IIIG
	1231	2300	HARV				1237		2				U
			HARV				1329	2300	1				IN
			HARV	1338	1340	2	1338	1340	3				IIIGG
			HARV				1450	1849	1				IIIN

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JULY 1980

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
15			HARV	1457	1458	3	1457	1458	3				IIIG
			DWIN	1457.5	1457.6	2							IIIG
			HARV	1555		2	1554	1455	2				IIIG
			HARV	1709		1	1709	1710	2				IIIG
			HARV				1714		3				IIIG
			HARV							1752	2038	1	IIIN
	2038	2400	CULG	2102	2400	1	2102	2400	1				IS,C,DC
			CULG				2120	2400	1				IIIS
			CULG				2130	2230					SCINT
			CULG				2142	2354	2				IIIN
			CULG				2231	2400	1				N,RS,DP
			CULG				2245	2245.5	2				DC
16			CULG				0000	0711	1				N,DC
			CULG				0000	0700					IIIS,W
	0000	0738	CULG	0000	0716		0000	0230					IS,C,W
			CULG				0012	0707	1				N,RS,DP
			LEAR				0040.5	0650.0	1				B
			CULG				0230	0405	1				IS,C
			CULG				0349	0602	2				IIIN
			CULG				0405	0716					IS,C,W
			CULG				0507.5	0508	3				IIIB,V
			CULG				0630	0716	1				SCINT
	0450	1830	DWIN	0634.1	0634.4	1							IIIG
			LEAR				0734.0	0754.6	1				S
	1231	2300	HARV	1303	2255	2	1307	1610	2				IN
			HARV				1327	1810	1				IIIN
			DWIN	1510	1600	1							IC,SL
			HARV	1511	1512	3	1508	1516	3	1508	1513	2	IIIGG
			HARV				1710		2	1710		2	IIIG
			PALE				1851.8	1900.1	1				CONT
			HARV	1858	1859	1	1858	1859	1	1858	1859	2	IIIB
			HARV				1920		2	1920		2	IIIG
			HARV				1948	1949	2	1948	1949	2	IIIG
			HARV	2019	2020	1	2018	2020	1				IIIGG,W
			HARV	2030	2032	1	2030	2035	3	2030	2031	3	IIIGG,V
			HARV	2050	2051	1	2050	2051	2				IIIG
			PALE				2101.8	2102.6	1				III
	2038	2400	CULG	2102	2400		2102	2400					IS,C,W
			CULG				2124	2400					IIIN,W
			CULG				2132	2400	1				N,DC
			CULG				2139	2315					N,RS,DP
			HARV	2146		1	2146		2	2146		2	IIIG
			CULG	2146	2147.5	1	2146	2147	2				IIIG
			CULG				2221		2				IIIB
			CULG	2222		1	2222		2				IIIB
			HARV	2222		1	2222		2	2222		2	IIIB
			PALE				2332.7	0007.8	1				S
			CULG				2333		2				IIIB
			CULG	2339.5	2340	1	2339.5	2340.5	2				IIIG
			CULG				2346.5		1				IIIB
17	0000	0738	CULG	0000	0545		0000	0545					IS,W
			CULG				0007		2				IIIB
			CULG				0007.5	0220					IIIS,W
			PALE				0030.2	0130.2	1				S
			LEAR				0031.7	0126.4	1				S
			CULG				0032	0220	1				IIIN
			CULG				0034.5		2				IIIB
			CULG				0042	0649	1				N,RS,DP
			CULG				0126		2				IIIB
			PALE				0130.2	0451.0	1				B
			LEAR				0136.8	0938.0	2				B
			CULG	0151	0154.5	2	0151.5	0155	2	0152	0154	1	IIIGG
			CULG				0216.5	0217.5	2				IIIG
			CULG	0220	0715	1	0220	0538	1				IIIS
			CULG				0355.5		2	0355.5		1	IIIB
	0500	1830	DWIN										
			CULG				0507.5	0508	3	0507.5		1	IIIG
			CULG				0538	0557	2				IIIS

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DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
17			CULG	0545	0719	2	0545	0557	2				IS,C
			LEAR				0555.2	0609.3	2				IV
			CULG				0557	0607	3				IIIS
			CULG				0557	0607	3				IS,G
			CULG				0603	0720					SCINT
			CULG				0607	0719	2				IS,C
			CULG				0607	0719	2				IIIS
	1231	2245	HARV	1241	2240	1	1238	2245	3				I
			HARV				1324	2030	2	1403	2030	2	IIIN
			HARV				1646	1649	3	1646	1649	2	IIIG
			HARV				1733		2	1733		2	IIIG
			HARV	1751	1754	2	1750	1805	2	1750	1805	2	IIIGG
			PALE				1845.7	1846.4	1				III
			HARV				1854			1854		3	IIIG
			PALE				1854.0	1854.7	2				III
			PALE				2030.0	2030.2	1				V
	2038	2400	CULG	2100	2116	1	2100	2400	2				IS,C
			PALE				2101.3	2101.9	1				V
			HARV				2104	2105	2	2104	2105	2	IIIG
			PALE				2104.2	2105.0	2				V
			CULG				2104.5	2105	2				IIIG
			CULG				2114	2400					IIIS,W
			CULG	2116	2224								IN,W
			CULG				2155	2400	1				N,RS,DP
			CULG	2224	2400	2							IS,C
18			CULG	0000	0720	1	0000	0718	1				IS,C
	0000	0738	CULG				0000	0700					IIIS,W
			PALE				0037.9	0039.1	1				V
			CULG				0038	0039	2				IIIG
			LEAR				0040.0	0040.5	1				V
			CULG				0041	0659	1				IIIN
			CULG				0203.5	0205	2	0203.5	0205.5	2	IIIGG
			PALE				0203.7	0204.8	2				V
			LEAR				0204.0	0205.3	1				V
			CULG				0310	0311	1				IIIG,U
			CULG	0433	0434	1	0433	0435	2				IIIG,U
			CULG	0454.5	0455.5	2	0454.5	0456	2				IIIGG,Z
	0452	1340	DWIN	0454.6	0455.5	2							IIIG
			CULG				0529		2				IIIB
			CULG	0539.5	0540	1	0539.5	0540	2				IIIG
			CULG				0612.5		2				IIIB
			CULG	0613		1	0613	0614	3				IIIG
			CULG				0701.5		2				IIIB
			CULG				0723.5	0724	2				IIIB,Z
			LEAR				0724.0	0724.5	2				III
			DWIN	0812	0825	1							I
	1231	2240	HARV	1314	2240	2	1238	2240	3				I
			HARV				1449		3				IIIG
	1600	1820	DWIN										
			HARV				1710		3				IIIG
			HARV	1903	2211	1	1537	2204	2	1537	2204	2	IIIN
			SGMR				1915.8	1916.1	1				V
			PALE				1915.8	1916.2	3				III
			HARV				1916		3	1916		3	IIIG
			PALE				1936.7	1937.3	2				V
			HARV				1937		2	1937		2	IIIG
	2038	2400	CULG	2059	2400	1	2059	2400	1				IS,C
			CULG				2105	2400	2				N,DC
			CULG				2113	2400					IIIS,W
			CULG				2146	2400	1				IIIN
			CULG				2159	2349	2				IIIG,N
			PALE				2159.2	2204.0	1				CONT
			PALE				2302.7	2303.5	2				III
			PALE				2322.9	2348.5	2				S
			LEAR				2345.7	2348.4	1				CONT
19			CULG	0000	0720	1	0000	0720	1				IS,C
			CULG				0000	0720	2				N,DC
			CULG				0000	0647	1				N,RS,DP

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JULY 198(

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
19	0000	0720	CULG				0000	0300	1				IIIS
			CULG				0000	0720	2				IIIN
			PALE				0019.5	0021.5	2				CONT
			LEAR				0019.5	0021.5	1				CONT
			LEAR				0046.0	0829.0	1				B
			CULG				0300	0505	2				IIIS
	0500	1820	DWIN	0500	0730	1							CONT,SL
			LEAR				0503.8	0504.1	2				V
			CULG				0505	0720	1				IIIS
	1231	2250	HARV	1249	2151	2	1238	2250	3				IC
			HARV	1308		1	1308		2				IIIG
			HARV	1321	1324	3	1321	1324	3				IIIG
			DWIN	1322.9	1323.3	2							IIIG
			HARV	1445	2233		1341	2235	3	1523	2216	2	IIIN
			PALE				1640.0	0450.0	1				B
			HARV	1654	1657	3	1654	1657	3				IIIGG
			DWIN	1655.1	1656.8	2							IIIG
			CULG				2100	2400	1				IIIS
	2039	2400	CULG	2100	2400	1	2100	2400	1				IS
			CULG				2120	2400	2				N,DC
			CULG				2212	2314	2				IIIN
20	0000	0738	CULG	0000	0718		0000	0718					IS,W
			CULG				0000	0728	1				IIIS
			CULG				0000	0718	1				N,DC
			CULG							0006	0500	1	IIIN
			LEAR				0036.0	0940.0	1				B
			CULG				0134	0606	2				IIIN
			CULG				0205	0610	1				N,RS,DP
			PALE				0333.3	0334.0	2				III
			LEAR				0333.4	0339.0	2				CONT
			PALE				0337.2	0338.0	3				III
			CULG	0428		1	0428	0428.5	3	0428	0428.5	2	IIIB
			LEAR				0428.2	0429.0	2				V
	0500	1345	DWIN	0844.5	0845.4	1							IIIG
	1232	2245	HARV	1234	1518	1	1232	2245	3				I,DC
			HARV	1319	1832	2	1320	2243	2	1731	2119		IIIN
			HARV				1458	1459	3				IIIGG
			HARV				1715	1719	2	1715	1719	2	IIIG
			PALE				1846.0	0452.0	1				B
			HARV	1923	1925	2	1923	1925	3	1923	1925	2	IIIGG
			HARV				1941	1945	3	1943	1945	2	IIIG
			PALE				1944.1	1945.2	2				CONT
			CULG				2058	2400	1				N,RS,DP
	2039	2400	CULG	2058	2400	1	2058	2400	1				IS
			CULG				2104	2400	1				IIIS
			CULG				2110	2400	2				N,DC
			CULG				2114	2222	1				SCINT
			CULG				2122	2356	2				IIIG,N
			HARV				2128	2129		2128	2129	2	IIIG
			PALE				2128.8	2129.2	2				V
			HARV				2136	2138	3	2136	2138	3	IIIGG
			PALE				2136.5	2136.9	2				V
			PALE				2137.5	2138.5	3				V
			CULG				2137.5	2139	3				IIIG,U
			CULG	2237	2238	2	2237	2240	3				IIIG,V
			HARV				2237	2239	3	2237	2239	2	IIIG,V
			PALE				2237.3	2239.9	3				V
			PALE				2346.1	2351.8	2				CONT
			LEAR				2346.9	0941.0	1				B
21			CULG				0000	0710	1				N,DC
			CULG	0000	0720		0000	0720					IN,W
	0000	0740	CULG				0000	0701					N,RS,DP
			CULG				0009	0720	1				IIIS
			PALE				0015.4	0022.0	2				CONT
			CULG	0016	0720	1	0016	0720	2				IIIN
			CULG				0234.5	0235	3	0234.5	0235	1	IIIG
			LEAR				0234.6	0235.3	2				V
			CULG	0255	0301	1							DCIM

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JULY 1980

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
21			CULG							0256	0310	1	SWF
			CULG	0328.5	0329	1	0328.5	0329	2	0328.5	0329	2	IIIG
			CULG				0348	0350.5	2	0348.5	0350.5	2	IIIG,V
	0630	1419	DWIN										
			LEAR				0656.4	0657.5	2				V
			CULG	0656.5	0657	2	0656.5	0657	3				IIIG,Z
			HARV				1249		3				IIIG
			SGMR				1249.1	1250.5	2				CONT
			HARV				1250	1252	2				UNCL
			HARV				1341	1342	2				IIIGG
			HARV				1356	1402	3			2	IIIGG
	1232	2245	HARV	1411	2240	1	1244	2245	2				I
			HARV				1411	1417	3	1412	1414	2	IIIGG
			SGMR				1412.4	1413.0	2				V
			SGMR				1413.5	1414.5	3				CONT
			HARV				1422	1425	2				IIIGG
			HARV	1435	2003	1	1256	2213	2	1649	2213	2	IIIN
			HARV				1440		2			2	IIIG
			HARV	1516		3	1516		3				IIIG
			HARV				1730	1733	2	1730	1733	3	IIIGG,V
			SGMR				1730.0	1730.4	1				V
			PALE				1730.0	1730.8	2				CONT
			HARV				1808		3				IIIG
			HARV				1824	1828	2	1824	1828	2	IIIG
			PALE				1824.8	1824.9	1				III
			PALE				1827.1	1828.2	1				CONT
			HARV				1912	1914	2	1912	1914	2	IIIGG
			PALE				1912.9	1914.5	1				CONT
			PALE				1919.0	1925.9	3				V
			SGMR				1919.7	1923.5	2				CONT
			HARV	1921		1	1920	1927	3	1920	1927	3	IIIGG,V
	2039	2400	CULG	2058	2400	1	2103	2400	1				IS,DC
			CULG				2102	2303	1				N,RS,DP
			CULG	2110	2400		2110	2400					IIIS,W
			CULG				2138	2353	2				IIIN
			PALE				2151.2	2226.2	2				S
			HARV				2236		3				IIIG
			CULG	2236.5	2237	1	2236.5	2237	1				IIIG
			PALE				2346.1	2351.8	2				CONT
			LEAR				2349.8	0940.0	1				B
22	0000	0738	CULG	0000	0711	1	0000	0218	1				IS,DC
			CULG				0000	0716	1				IIIS
			CULG	0003	0704	1							IIIN
			CULG				0007	0309	1				N,RS,DP
			CULG				0012	0704	2				IIIN
			PALE				0026.0	0037.3	2				S
			CULG				0037	0037.5	2	0037		1	IIIG
			PALE				0111.9	0123.5	3				S
			LEAR				0116.9	0119.1	2				CONT
			CULG				0117	0119	3	0117.5	0119	2	IIIGG
			CULG				0216.5	0217.5	2	0217	0217.5	1	IIIG
			CULG				0218	0420	2				IS,DC
			CULG				0344.5	0345	2	0344.5	0345	2	IIIG
			CULG				0346	0348.5	2	0346	0348	2	IIIG
			PALE				0353.3	0354.0	2				III
			CULG	0353.5	0354	2	0353.5	0354	3	0353.5	0354	2	IIIG
			CULG				0413.5		2	0413.5		1	IIIB
			CULG				0420	0537	1				IS,DC
			CULG				0537	0738					IN,W
	0850	1820	DWIN										
	1232	2245	HARV	1313	1540	1	1244	1540	1				I
			HARV				1339	2236	2	1532	1906	2	IIIN
			HARV	1540	1755	1	1540	1755	3				I
			HARV	1755	1846	1	1755	2245	1				I
			PALE				1905.8	1906.1	1				III
			PALE				1915.6	1915.9	3				III
			SGMR				1915.7	1915.9	2				III
			HARV				1916		3	1916		3	IIIB
	2039	2400	CULG	2057	2400		2057	2400					IS,DC,W

SOLAR RADIO EMISSION
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JULY 1980

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
22			CULG				2103	2314					IIIS,W
			CULG				2119	2311	1				IIIN
			CULG				2314	2400					IIIN,W
23	0000	0738	CULG	0000	0721		0000	0738					IS,DC,W
			CULG				0023	0738					IIIN,W
			CULG	0054	0111	1	0056	0111	1			IV	
			CULG	0056	0100	1	0056	0103	3	0057	0100	2	IIIG,V
			PALE				0057.0	0105.5	3				V
			LEAR				0057.0	0110.8	2				V
			CULG							0058	0155	1	SWF
			CULG				0100	0123	2	0113	0121	2	II
			CULG				0100	0106	1				UNCLF
			CULG	0101	0106		0101	0106					PULSATIONS
			CULG							0104.5	0105	2	UNCLF
			PALE				0105.5	0449.0	2			IV	
			LEAR				0110.8	0749.5	1			IV	
			CULG	0111	0720	2	0111	0730	2			IV	
			CULG				0123	0730					SCINT
			LEAR				0749.5	0942.0	1				B
	1232	2250	HARV	1250	1648	1	1254	1648	2				IN
	0500	1820	DWIN	1427.5	1428.1	2							IIIG
			HARV				1547		2				IIIG
			HARV	1648	2240	1	1648	2240	1				IN
	2039	2400	CULG	2055	2400								IS,W
			CULG				2055	2400					IN,W
			CULG				2241	2241.5	2				IIIG
			HARV				2241	2242	2				IIIG
			CULG				2330	2358					IIIN
			CULG	2355	2400		2103	2400					IIIN,W
24	0000	0716	CULG	0000	0130								IS,W
			CULG	0130	0535	1							IS
			CULG				0133.5	0134					IIIG,W
			CULG				0229	0656					IIIN,W
			CULG				0235	0245	1				I
			CULG	0535	0716								IS,W
			CULG	0620.5									IIIB,W
			CULG	0621.5	0623								IIIG,W
			CULG	0624									IIIB,W
	0445	1815	DWIN	0648.1	0649.0	2							IIIG
			CULG	0648.5	0649	2							I
	0730	0738	CULG										
			DWIN	0922.7	0922.9	2							IIIG
	1232	2245	HARV				1557	1558	3			2	IIIG
			HARV				1906	1908	1				IN
			HARV				2005		2				IIIG
	2039	2400	CULG										
25			PALE				0004.4	0005.5	1				CONT
	0000	0738	CULG	0004.5	0005	1	0004.5	0005	3	0004.5	0005	1	IIIG
			LEAR				0004.5	0005.6	1				CONT
			CULG				0005.5		1				IIIB
			CULG				0031	0540					IIIN,W
			CULG	0132		1							IIIG,RS
			LEAR				0835.2	0845.0	1				CONT
	0445	1820	DWIN	0931.4		2							IIIB
			DWIN	1141.5	1141.7	1							IIIG
			HARV	1653	1654	1							IIIG
	1232	2245	HARV	2010	2048	1	1421	2151	1				IN
	2039	2400	CULG	2056	2205								IS,W
			HARV				2102		1				IIIBW
26	0000	0738	CULG	0000	0043								IS,W
			CULG	0046	0046.5	2							IIIG
			CULG				0046.5						IIIB,W
			CULG	0125	0142								IS,W
			CULG	0238	0240								I,W
			CULG	0258	0258.5	1							IIIG
			CULG	0307	0414	1							IS

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JULY 1980

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
26			CULG	0503	0738								IS,W
	0500	1820	DWIN	0545.3	0545.6	1							IIIG
			CULG	0548	0548.5	3							IIIG
			DWIN	0548.0	0548.6	2							IIIG
			CULG	0635.5	0636	2							IIIG
			HARV	1321		1							IIIGW
	1232	2245	HARV				1323	1402	1				IN
			HARV	1338		1							IIIGW
			HARV				1659	1700	2	1659	1700	2	IIIG
			HARV				1710	1711	2	1710	1711	2	IIIB
			HARV				1908		2	1908		2	IIIG
	2039	2400	CULG				2112	2143					IIIN,W
			CULG	2138	2235								IS,W
			HARV				2151	2220	1				IN
			HARV				2210		2				IIIB
			CULG				2210	2210.5	2				IIIB
			PALE				2210.3	2210.5	1				III
			CULG	2354	2400								IS,W
27	0000	0738	CULG				0015	0336					IIIN,W
			CULG	0015	0738								IN,W
			CULG	0235		1							IIIB
	0500	1345	DWIN										
	1232	2245	HARV				1241	1242	2				UNCL
			HARV	1321	1357	1	1253	2245	2				I
			HARV				1430	2018	1				IIIN
			HARV				1607		2	1607		1	IIIGG
			HARV	1630		1							IIIG
			HARV				1736	1737	3				IIIG
			HARV	1908	1909	2	1906	1911	2	1908	1911	2	IIIGG
			PALE				1908.5	2008.5	1				S
			HARV				1923	1926	2	1923	1926	2	IIIG
			HARV				2044	2047	2	2044	2047	2	IIIG
	2038	2400	CULG	2054	2158								IS,W
			CULG				2140	2142	2				IIIG
			PALE				2140.8	2142.6	2				V
			HARV				2141		2	2141		2	IIIG
			CULG				2156	2159					IIIN,W
			CULG	2209.5	2210.5	1	2209.5	2210.5	2				IIIG
			PALE				2209.8	2210.8	1				V
			HARV	2210		1	2210		2	2210		2	IIIG
			CULG				2303.5	2305.5					IIIG,W
			CULG	2304	2304.5	2	2304	2304.5	2				IIIG
			PALE				2304.4	2305.1	1				III
			PALE				2310.9	2311.2	2				III
			CULG				2331.5						IIIB,W
28			LEAR				0004.2	0010.1	1				CONT
			PALE				0004.4	0010.7	2				CONT
	0000	0738	CULG	0004.5	0005	1	0004.5	0005	3				IIIG
			CULG				0006	0522					IIIN,W
			CULG				0008	0010.5	2	0008.5	0009	1	IIIG,V
			CULG	0122	0550								IN,W
			CULG	0143.5	0145.5		0143.5	0145					IIIG,W
			LEAR				0206.0	0206.3	1				III
			CULG				0207	0207.5	1				IIIG
			PALE				0207.1	0207.3	1				III
			CULG	0245	0245.5	1	0244	0245.5	1				IIIG
			CULG	0345.5			0345.5						IIIB,W
			CULG	0439.5	0440	1	0439.5	0441	1				IIIG
			CULG				0520.5		1				IIIB
	0645	1815	DWIN										
			LEAR				0733.6	0805.9	1				S
	1232	2245	HARV	1642	2146	2	1647	2010	2				IIIN
			HARV	1829	1830	3	1829	1830	2	1829	1830	1	IIIG
			HARV				1941		2	1941		2	IIIG,V
			HARV				2100	2103	2	2100	2101	2	IIIG
	2116	2400	CULG										
29	0000	0720	CULG				0009	0720					IIIN,W

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JULY 1980

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
29			LEAR				0228.0	0327.5	1				S
			PALE				0228.5	0328.5	1				S
			CULG				0231	0702	1				IIIN
			CULG				0248.5	0249	2				IIIG
			CULG				0304	0304.5	2	0304.5	0305	1	IIIG
			CULG				0313	0313.5	2				IIIG
			CULG	0320.5		1	0320.5		2				IIIB
			PALE				0328.6	0335.9	1				CONT
			LEAR				0334.3	0347.2	1				S
			CULG				0335.5	0339					N,RS,DP
			PALE				0335.9	0339.4	2				V
			CULG				0336	0337.5	2				IIIGG
			CULG	0338	0339.5	1	0338	0340	3	0338.5	0340	1	IIIGG
			CULG				0340	0340.5					Z
			PALE				0341.7	0343.6	3				V
			LEAR				0342.2	0345.1	2				V
			CULG	0342.5	0344	2	0342.5	0345	3	0342.5	0344.5	2	IIIGG,Z
			LEAR				0441.3	0443.8	1				V
			CULG				0441.5	0443.5	3				IIIG,V,Z
			CULG				0449		1				IIIB,U
			CULG				0509	0512					SLOW DRIFT
			LEAR				0509.0	0514.2	1				CONT
			CULG				0658.5	0659	2				IIIG
	0732	0738	CULG										
			LEAR				0745.2	0745.5	1				V
	1232	2245	HARV				2031	2032	1				IIIG
	2039	2400	CULG				2322.5						IIIB,W
			CULG				2325.5						IIIB,W
30	0000	0738	CULG				0132	0142					IIIN,W
			CULG	0335	0406								IN,W
			CULG	0449.5	0450								IIIG,W
			CULG	0450.5									IIIB,W
	1232	2245	HARV				1311	1314	2				I
			HARV				1958	1959	2	1958	1959	2	IIIB
			HARV	2033	2034	3	2033	2034	3				IIIG
	2039	2400	CULG				2253	2253.5					IIIG,W,RS
31	0000	0738	CULG				0015.5	0016.5					IIIG,W
			PALE				0015.9	0023.2	1				CONT
			CULG				0023	0023.5	2				IIIG
			LEAR				0023.1	0023.2	1				III
			CULG				0352.5	0353	2				IIIG
			CULG				0356	0358					IIIGG,W
			LEAR				0356.6	0357.3	1				CONT
			CULG	0459	0500	1							IIIG
	1245	2245	HARV				1418	1419	2				IIIB
	2038	2400	CULG				2346	2351					IIIN,W

The symbols used in connection with the spectral type in describing the important bursts are as follows:

B = Single burst
G = Small group (< 10) of bursts
GG = Large group (> 10) of burst
C = Underlying continuum (particularly with type I)
S = Storm in the sense of intermittent but apparently connected activity
N = Intermittent activity in this period
U = U-shaped burst of Type III

RS = Reverse slope burst
DP = Drifting pairs
DC = Drifting Chains
H = Herringbone
W = Weak
P = Pulsations
CONT = Continuum
UNCLF = Unclassified activity
DCIM = Fast drift

COSMIC RAY INDICES

(Neutron Monitors)

JULY 1980

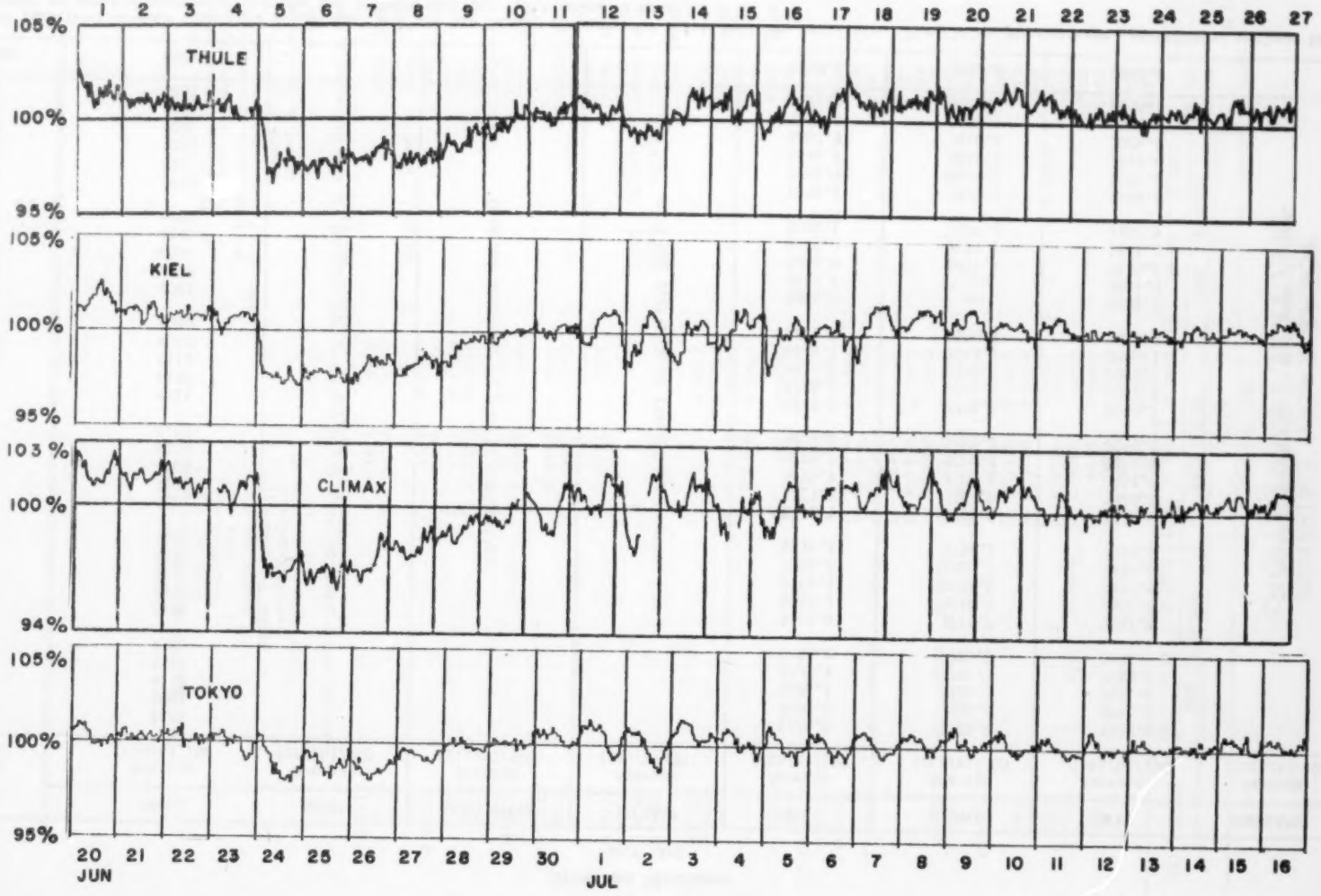
July 1980	THULE Average (cts/h)/100	ALERT Average (cts/h)/100	DEEP RIVER Average (cts/h)/300	CALGARY Average (cts/h/100	KIEL Average (cts/h)/100	CLIMAX Average (cts/h)/100	TOKYO Average (cts/h)/100	HUANCAYO Average (cts/h)/100
1	4109				5728.5	3726.8	3563.0	
2	4061				5699.0	3705.8	3545.1	
3	4113				5698.3	3728.2	3571.8	
4	4117				5732.3	3702.3	3554.5	
5	4100				5706.2	3709.3	3549.6	
6	4109				5719.0	3715.6	3547.6	
7	4128				5748.3	3740.1	3551.8	
8	4128				5768.3	3739.0	3557.6	
9	4117				5752.2	3728.7	3558.0	
10	4136				5739.3	3734.1	3553.9	
11	4123				5742.1	3722.8	3547.0	
12	4100				5723.8	3703.8	3550.5	
13	4100				5725.9	3707.5	3552.6	
14	4108				5729.7	3711.8	3551.8	
15	4112				5733.8	3722.1	3559.0	
16	4116				5742.8	3726.1	3560.0	
17	4130				5746.8	3742.8	3567.4	
18	4112				5710.7	3734.7	3558.5	
19	4043				5635.1	3645.8	3520.1	
20	4090				5671.9	3660.8	3536.4	
21	4081				5656.4	---	3539.7	
22	4078				5642.7	---	3541.8	
23	4094				5668.8	3677.6	3545.6	
24	4093				5679.0	3694.1	3544.3	
25	4082				5684.1	3674.2	3537.5	
26	3953				5534.4	3572.5	3509.2	
27	3971				5545.9	3581.1	3506.2	
28	4013				5595.5	3615.1	3519.6	
29	4021				5607.9	3618.5	3526.4	
30	4035				5639.4	3645.1	3536.5	
31	4052				5674.9	3680.5	3544.5	
MEAN	4085				5689.8	3692.0	3545.4	

Data not available at time of publication.

For less than 24-hour coverage, parentheses enclose the number of hours for which data are available. For Climax and Huancayo, parentheses enclose the number of section hours whenever the sum of both sections falls below 40 hours.

COSMIC RAY INDICES
(Neutron Monitors)

Bartels Rotation 2008 (June - July 1980)

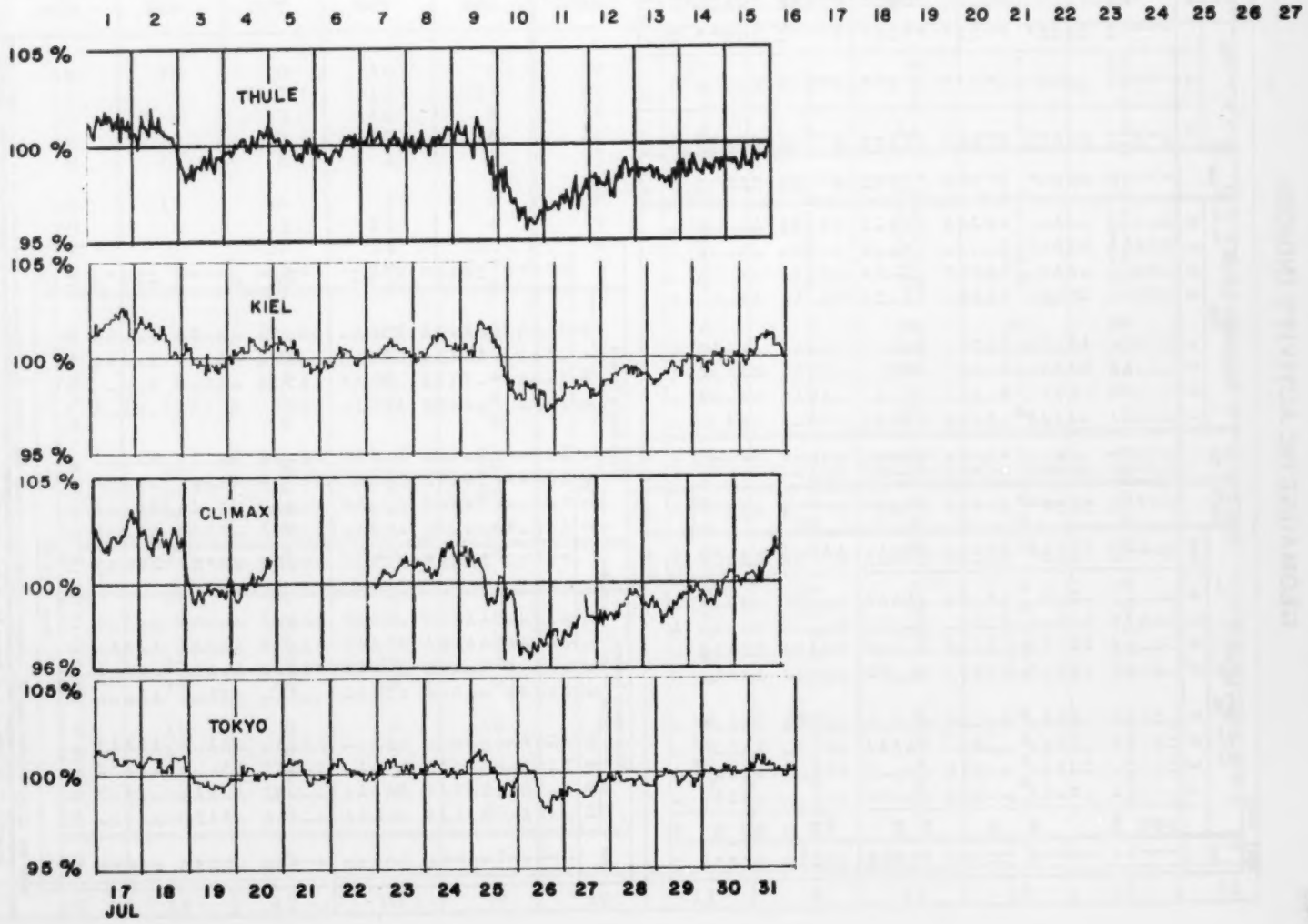


COSMIC RAY INDICES
(Neutron Monitors)

JUN JUL

COSMIC RAY INDICES
(Neutron Monitors)

Bartels Rotation 2009 (July 1980)



GEOMAGNETIC ACTIVITY INDICES

JULY 1980

Day	Three-Hourly Indices Kp									Ap	Cp	Three-Hourly Indices Km								Am	aa			
		1	2	3	4	5	6	7	8	Sum			1	2	3	4	5	6	7	8		N	S	M
1	Q5	2	1+	1+	1	1	1	1-	2-	10	5	0.2	2-	1+	1	0+	1-	1-	0+	2-	7	10	3	6 7 CC
2	Q1	1-	0+	0+	1+	0+	1-	1+	1	6	3	0.1	1-	0	1-	1-	0+	0+	1+	1	4	5	2	3 5 CC
3	Q3	1-	1+	1	2-	1+	1	0+	1	8+	4	0.1	1+	1+	1	1+	1+	0+	0+	1-	7	10	5	8 8 CC
4		0	1-	2-	2+	3-	3	1+	2	14-	7	0.4	0	0+	2	3-	2+	3-	1+	2	13	17	12	7 22
5	D4*	3-	4	3-	3-	3+	3+	3+	2-	24-	15	0.9	3-	3+	3-	3	3	3+	3+	2-	28	34	19	24 30
6		2	1+	1	3	3	3-	2+	3	18+	10	0.6	2	1+	1+	3-	3-	2	2+	3-	18	30	11	13 29
7		2+	2	3+	4-	3-	3-	3-	2+	22-	13	0.7	3-	2+	3+	3+	2+	3-	2+	3-	24	26	21	26 21
8		4	2+	2-	2+	2-	3	4-	3	22-	14	0.8	4-	2+	2-	2	2	2+	3+	3+	25	29	29	25 34
9		3-	3-	2+	2+	2-	1+	2	1-	16-	8	0.4	3-	3-	2+	3-	2-	1+	2	1	17	15	13	19 10
10	Q2	0+	1	0	1	1+	1+	2-	1	8-	4	0.1	0+	1	0	1-	1	1	1+	1	5	10	4	4 11 CC
11		2	2	1	2-	4	2	2+	3-	18-	10	0.6	2	3-	1+	1+	3+	2-	2+	3-	18	21	10	8 24 K
12	Q7	2	1	1	1	1-	2+	1	1+	10+	5	0.2	2+	1	1	1-	1-	2-	1	2-	9	12	6	7 12 C
13		2+	2+	2+	1	2+	4-	2-	1	17-	9	0.5	2+	3-	3-	1+	2-	3-	1	1+	16	20	13	12 22
14		2+	2-	1+	2+	2+	2	3	2+	17+	9	0.5	3-	2-	1+	2+	2+	1+	2	2+	16	20	9	12 17
15		2+	2+	1	2-	1	2-	1	2	13	6	0.3	2+	2	1	1+	1	1+	1	2-	10	15	4	9 11 CC
16	Q9	2-	1	1+	2	2-	2-	1+	2	13-	6	0.3	2-	1	1	1+	1+	1	1	2	9	13	7	9 11 CC
17		2	2-	2-	1	1	1	3-	2+	13+	6	0.3	2-	2	2-	1	1-	1-	2+	2	12	13	7	8 12 CC
18	D3	3	2	1+	2-	2	3-	6	7-	25+	30	1.3	3-	2	1+	1+	2	2	5-	6-	39	42	35	12 65
19		5+	4	3-	1	2+	2+	1+	2-	21-	16	0.9	4+	4-	3-	1	1+	2-	1	2	22	31	9	26 14
20		2-	1+	1+	1-	3+	3+	3-	2-	16	9	0.5	1+	1	1	1-	3-	3-	2-	1+	12	15	9	4 21 KK
21		3	3-	2	1	4	3+	3-	3	22-	14	0.8	3	3	2	1+	3+	3	3-	3-	25	27	21	14 36
22	Q6K	1	1-	1-	0+	0+	2-	1	3	9-	5	0.2	1+	1+	0+	0+	0+	1+	1	3-	8	9	4	4 10 CK
23	Q4	1+	0+	0+	1	1+	2-	1	2	9	4	0.2	1+	0	0	1	1	2-	1-	2-	6	9	5	5 10 CC
24		1	2	1-	0+	2+	1+	3	2+	13	7	0.3	1	2-	1-	1-	1+	1-	2+	2+	10	17	6	5 18 KK
25	D1	1	1+	1	4-	5-	6-	6+	7	31-	46	1.5	1	1+	1+	3+	3+	4+	5	6-	47	75	38	13 00
26	D2	6	4-	2+	3+	5-	3+	3-	2	28	26	1.2	5	3+	2+	3	3+	3-	2	2+	35	43	22	37 29
27	D5*	3+	3+	3	3+	2+	2+	3-	3+	24-	15	0.8	3+	3+	3-	3	2-	2-	2+	3-	24	30	22	31 21
28		4-	4-	3-	3-	3+	3+	2	1+	23-	14	0.8	3+	3	2+	3-	3	3-	2	1	23	31	17	28 20
29	Q0	1-	2-	1	1	2-	2+	2+	2-	12+	6	0.3	1	2-	2-	1+	1+	2-	2	2-	11	14	7	8 13 CK
30		2	1+	2-	1+	2	2+	2+	3-	16-	8	0.4	2	1+	2-	1+	2-	2-	2-	2+	13	17	8	8 17 CC
31	Q8	2	2-	2	2-	1+	1	2-	1	12+	6	0.3	2	2	2+	2-	1+	1	1	1	11	13	10	13 10 CC
										Mean	11	0.53									16.9	21.7	12.5	17.4

Day	Three-Hourly Indices Kn								An	Three-Hourly Indices Ks								As
	1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8	
1	2	1+	1+	1-	1+	1	1-	2	9	2-	1+	1-	0+	0	0+	0	1+	5
2	1	0	1-	1+	0+	1-	2-	1+	6	0	0	0+	0	0	0	1-	1	2
3	1+	1+	1	2-	2	1	1-	1+	9	1+	1+	1-	1+	1	0	0	0	5
4	0+	1-	2+	3-	3-	3	2-	2	17	0	0	2-	2	2-	2-	1-	2-	9
5	3	3+	3	3	4-	3+	3+	2	32	2+	3	3-	3-	3-	3+	3	1+	24
6	2+	1+	2-	3	3	3-	3-	3	23	2-	1+	1+	2+	2	1	1+	3-	13
7	3-	2	3+	4-	3-	3	3-	3-	27	3	3-	3+	3	2-	2-	2-	3-	22
8	3+	2+	2-	2	2+	2+	3	3	22	4	3-	2-	2	2-	2+	4-	4-	28
9	3-	3-	2+	3	2	2	2+	1+	19	3-	3	2+	3-	1+	1-	2-	1-	15
10	0+	1+	0+	1	2-	2-	2-	1+	8	0+	0+	0	0	0+	0+	1	1-	3
11	2-	3-	1+	2	4-	2+	3-	3	22	2	3-	1+	1-	3-	1	2	2+	15
12	2	1+	1+	1+	1+	2+	1+	2-	11	2+	1-	1-	0	0+	1+	0+	1+	7
13	2+	3-	3-	1+	2+	3	2-	2-	19	2+	3	2+	1-	1+	2-	1-	1-	13
14	3-	2-	2-	3	3-	2+	3-	3-	21	3-	1+	1+	2-	1+	0+	1	2-	11
15	2+	2-	1	2	2-	2+	1+	2+	13	2	2+	1	1-	0	0+	0+	1	7
16	2-	1	1+	2-	2	2-	1+	2+	11	2-	1	1-	1+	1-	0+	0	2-	6
17	2	2	2	2-	1	1+	3-	3-	15	2-	2	1+	0+	0+	0+	2	2-	9
18	3-	2	1+	2-	2+	3-	5	6-	41	2+	2	1	1	1+	1+	5-	6	37
19	4-	3+	2+	1+	2	2+	1+	2	22	5-	4-	3-	0	0+	1	1-	2-	23
20	2-	1+	1+	1	3	3	2+	2-	16	1+	1	1-	0+	2	2-	1	1-	8
21	3	3-	2-	1	3	3+	3-	3	25	3	3	2+	2-	3+	3	3-	3-	25
22	1+	1	1-	0+	0+	2	2-	3	10	1+	2-	0+	0	0	1-	0+	2	6
23	2-	0+	0	2-	1+	2+	1+	2	9	1+	0	0	0+	1-	1-	0	1	3
24	1+	2-	1	1	2	1+	3-	2+	13	1-	2	0+	0+	1-	0	2	2+	8
25	1	2-	2-	4-	4-	5	5+	5+	54	1	1+	1-	3	3-	3+	5-	6-	41
26	5-	3	3-	4-	4-	3	2+	2+	37	6-	3+	2	3-	3	2-	2-	2+	33
27	3+	4-	3-	3+	2+	2+	3-	3	28	3+	3+	2+	3-	1+	1	2	3-	22
28	4-	3+	3-	3-	3	3+	2+	1+	27	3	3	2	2+	3-	2	2-	1	20
29	1+	2-	1+	2-	2	2	2+	2	13	1-	2-	2-	1-	1	1	1+	1+	8
30	2	1+	2-	1+	2	2+	2	3-	14	2+	2-	2-	1+	1+	1	1+	2+	11
31	2-	2-	2	2	2-	1	1+	1+	12	2+	2+	3-	2-	1+	1-	0+	1-	11
								Mean	19.5									14.5

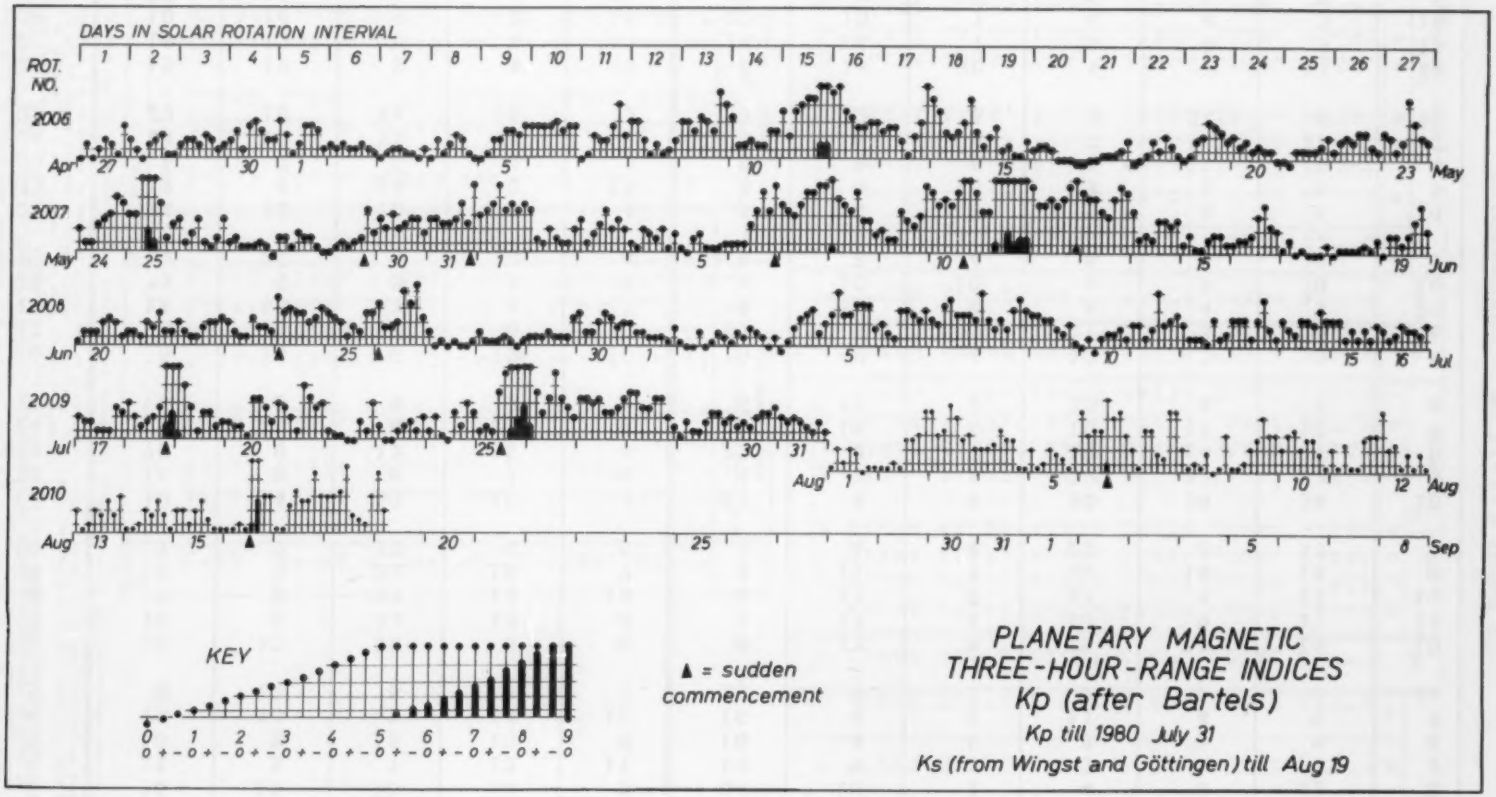
Quiet days (Q) and disturbed days (D), geomagnetic planetary three-hour-range indices (Kp) (integers alone are equivalent to those normally given with a small zero), magnetic character figures (Cp), and average amplitude (Ap) (unit 2 nT) prepared by Geophysikalisches Institut at the University of Göttingen, F.R. of Germany for the International Service of Geomagnetic Indices. Ten most quiet days [Q1-Q0(10)] and five most disturbed days [D1-D5] are ordered from most quiet or disturbed, respectively. A or K means "not really quiet" (A = "Ap>6", K = "Ap≤6 but one Kp≥30 or two Kp values≥3-"). An asterisk means "not really disturbed" (Ap<20).

Geomagnetic three-hourly indices Km, Kn, Ks, daily mean values Am, An, As (unit 1nT), and indices aa are prepared by M. Menvielle of the Institut de Physique du Globe, Paris, France. For aa indices daily north (N) and south (S) values, and half-daily antipodal mean (M) values are given. Quiet 24-hour and 48-hour intervals centered on 1200 UT are indicated for really quiet as C and for quiet but with some slightly disturbed three-hour intervals as K. The first hundred years series of aa is in IAGA Bulletin No.33, and complementary data are in IAGA Bulletin No.39.

DAILY AVERAGE INDICES Ap

	1979					1980						
DAY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL
1	16	10	10	16	9	24	10	3	4	8	22	5
2	11	5	7	12	11	12	9	3	3	4	7	3
3	10	9	13	10	9	18	3	5	7	3	9	4
4	16	10	9	10	16	16	4	5	11	4	5	7
5	8	17	6	2	7	12	3	7	7	7	4	15
6	18	15	36	3	6	8	33	9	28	12	16	10
7	10	6	32	12	4	5	12	7	18	9	27	13
8	7	6	37	14	10	6	17	6	17	7	23	14
9	6	5	23	19	7	3	11	7	20	18	14	8
10	7	9	17	6	5	3	4	4	22	8	33	4
11	10	14	10	10	5	11	4	4	30	38	59	10
12	18	8	8	7	4	4	3	1	28	23	32	5
13	76	8	12	35	4	23	2	7	18	14	27	9
14	7	10	6	13	4	9	18	5	10	17	10	9
15	4	8	8	3	9	6	33	2	20	6	5	6
16	5	14	8	12	10	9	40	4	12	3	9	6
17	8	11	4	8	13	13	6	5	11	3	3	6
18	11	64	3	4	7	4	10	4	4	4	3	30
19	35	6	5	7	6	4	10	10	5	8	8	16
20	42	22	6	10	4	6	6	4	6	5	6	9
21	22	23	10	6	4	6	4	18	5	4	6	14
22	12	6	14	2	15	5	4	16	9	6	6	5
23	5	7	6	4	3	5	9	6	6	11	6	4
24	13	15	12	24	7	5	6	4	7	12	13	7
25	22	19	14	15	2	7	13	6	9	34	8	46
26	15	19	8	4	10	6	14	30	5	7	15	26
27	12	15	6	4	12	24	14	7	5	3	3	15
28	10	16	9	2	16	27	10	7	4	4	3	14
29	77	15	11	4	32	26	7	8	6	6	5	6
30	15	18	5	15	20	10		11	8	10	8	8
31	12		5		9	5		21		16		6
MEAN	18	14	12	10	9	10	11	8	11	10	13	11

GEOMAGNETIC ACTIVITY INDICES



PRINCIPAL MAGNETIC STORMS

JULY 1980

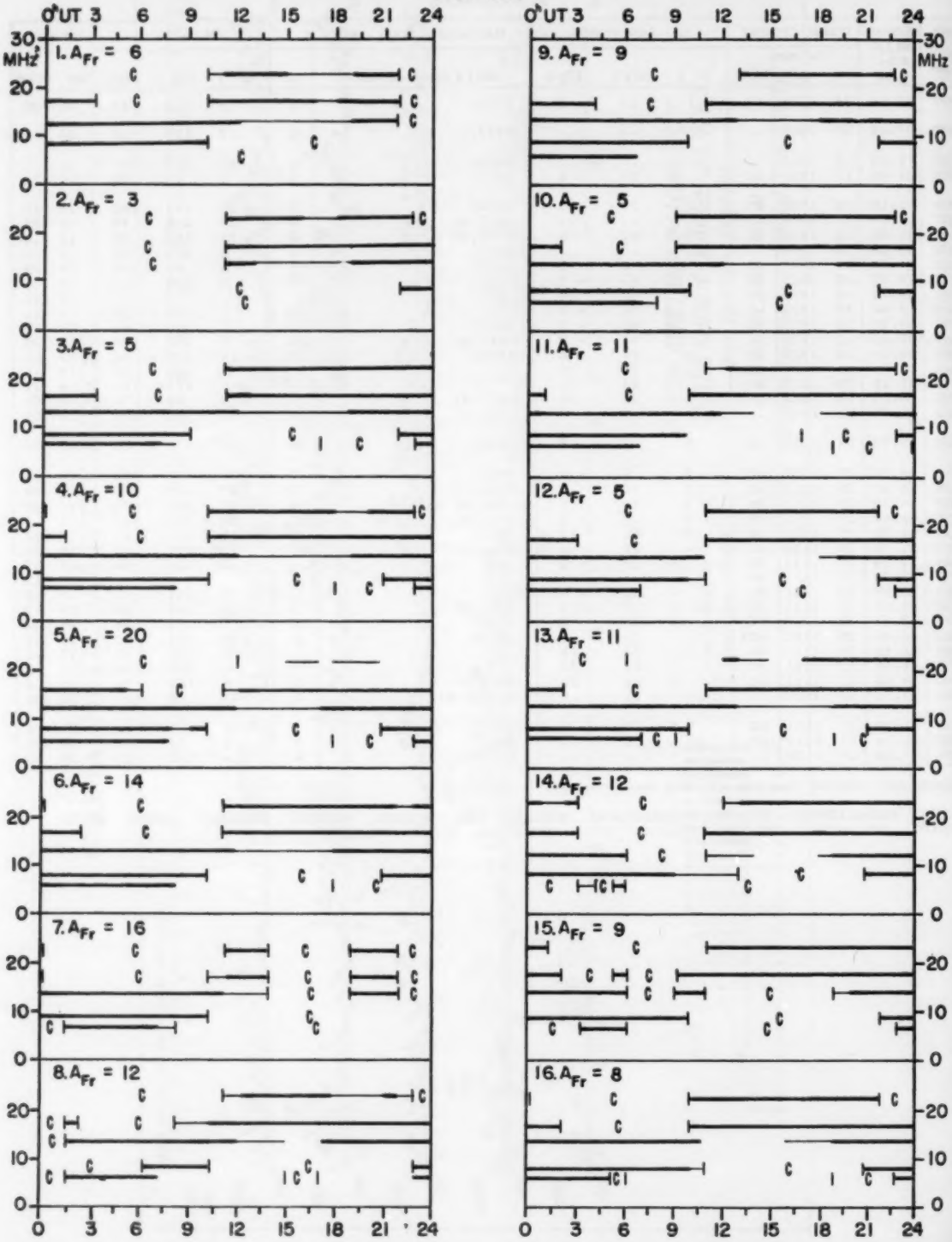
OBS. (3 letter code)	GEOMAG-NETIC LATI-TUDE	COMMENCEMENT			SC - AMPLITUDES			MAXIMUM 3 HOUR - INDEX K		RANGES			UT END	
		DAY	hr min (UT)	TYPE	D(')	H(γ)	Z(γ)	DAY (3 HOUR PERIOD)	K	D(')	H(γ)	Z(γ)	DAY	HOUR
HYB	07.6N	04	0736	SC	- .3	13	- 2	05(6)	4	5	125	27	05	20
HYB	07.6N	06	0400	..	..	..	..	07(3)	4	7	113	24	08	03
FRD	49.6N	17	19--	..	..	..	..	18(8)	6	17	169	107	19	
HYB	07.6N	17	1936	SC	- .3	13	- 1	17(7)	3	7	92	27	18	14
NEW	55.1N	18	1927	SC	7	79	13	18(8)	5	25	153	162	19	10
WIT	54.2N	18	19--	..	..	..	..	18(7,8)	6	29	245	70	19	06
IRK	41.0N	18	1924	SC	1.6	92	14	18(7,8)	6	25	164	58	19	10
SJG	29.9N	18	1900	..	..	..	..	18(8)	6	6	119	30	19	08
HON	21.1N	18	1927	SC	--	8	2	18(8)	4	8	85	26	19	09
JAI	17.3N	18	1925	SC	- .5	53	- 7		-	9	128	47	19	11
SHL	14.7N	18	1925	SC	--	--	--						19	11
UJJ	13.5N	18	1925	SC	- .2	58	- 9		-	7	135	37	19	11
ABG	09.5N	18	1925	SC	- .4	48	- 3	18(7)	6	7	129	45	19	11
HYB	07.6N	18	1925	SC	- .2	52	- 2	18(7,8)	6	7	143	29	19	20
GUA	04.0N	18	1925	SC	1	30	- 6	18(8)	6	10	100	40	19	07
ANN	01.5N	18	1925	SC	- 1.5	56	29		-	6	146	60	19	11
TRD	01.1S	18	1925	SC	.3	43	57		-	5	177	111	19	11
PMG	18.6S	18	1925	SC	1.5	37	36	18(7,8)	5	9	90	70	19	09
HER	33.7S	18	1900	..	..	..	..	18(7,8)	6	22	110	126	19	06
SJG	29.9N	24	1111	SC	1	12	3	25(8)	6	15	170	53	26	20
COL	64.6N	25	1058	SC*	- 2	9	- 6	25(6)	6	132	820	350	26	05
NEW	55.1N	25	1112	SC	5	48	3	25(6,7)	5	37	180	195	29	09
WIT	54.2N	25	1111	SC	2	22		25(6,8) 26(1)	6	43	245	105	26	20
FRD	49.6N	25	1112	SC	2	18	- 3	25(7,8)	6	24	207	126	29	
IRK	41.0N	25	1112	SC	2.5	61	13	25(7)	6	22	211	43	26	22
HON	21.1N	25	1116	SC	--	22	8	25(4,8)	4	17	91	44	26	20
JAI	17.3N	25	1111	SC	- .9	19	- 6		-	12	134	56	27	12
SHL	14.7N	25	1111	SC	--	--	--						27	12
UJJ	13.5N	25	1111	SC	- .7	21	- 5		-	9	141	47	27	12
ABG	09.5N	25	1111	SC	- .7	17	- 9	25(6,8)	5	10	161	60	27	12
HYB	07.6N	25	1112	SC	- .8	24	- 2	25(8)	6	9	160	26	26	22
GUA	04.0N	25	1111	SC*	..	23	- 6	25(8)	6	10	110	50	26	21
ANN	01.5N	25	1111	SC	- 1.1	33	13		-	8	230	41	27	12
TRD	01.1S	25	1111	SC	- .3	29	33		-	--	258	166	27	12
PMG	18.6S	25	1111	SC	- .2	24	22	25(6,8)	5	8	100	50	27	12
HER	33.7S	25	1500	..	..	..	..	25(6,7,8)	6	26	120	116	26	06
IRK	41.0N	27	0151	SC	1.6	10	3	27(4)	5	20	113	44	28	19
HON	21.1N	27	0210	SC	--	8	5	28(1)	4	3	53	13	28	04
HYB	07.6N	27	0100	..	..	..	..	27(2,4)	4	9	132	30	28	22

Reports were received from the following observatories:

ALIBAG ANNAMALAINAGAR COLLEGE FREDERICKSBURG GNANGARA GUAM HERMANUS HONOLULU HYDERABAD IRKUTSK JAIPUR NEWPORT PORT MORESBY SAN JUAN SHILLONG SITKA TRIVANDRUM UJJAIN WITTEVEEN

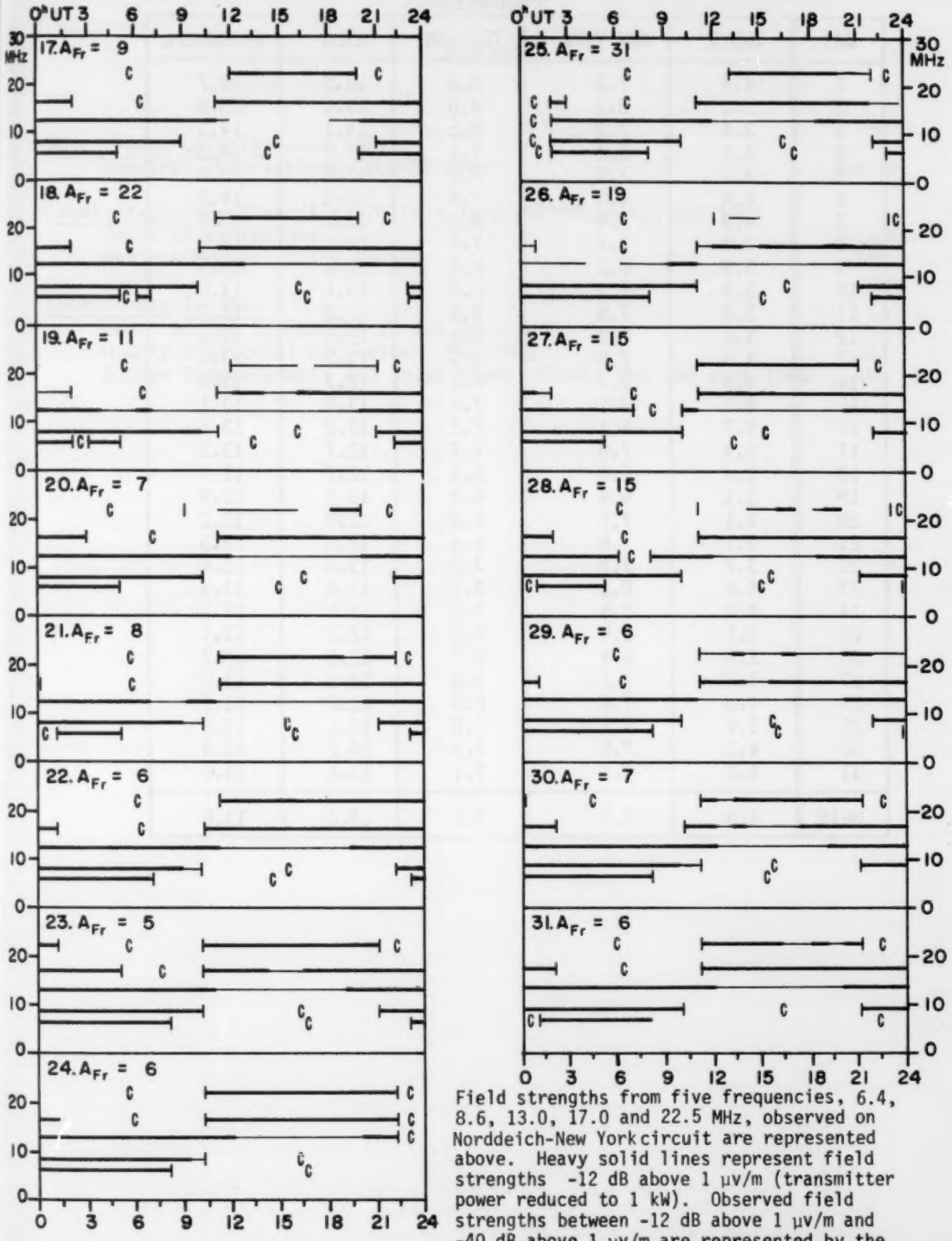
TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

JULY 1980



TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

JULY 1980



Field strengths from five frequencies, 6.4, 8.6, 13.0, 17.0 and 22.5 MHz, observed on Norddeich-New York circuit are represented above. Heavy solid lines represent field strengths -12 dB above 1 μv/m (transmitter power reduced to 1 kW). Observed field strengths between -12 dB above 1 μv/m and -40 dB above 1 μv/m are represented by the fine line. **Adopted from Observations by Deutsche Bundespost**

RADIO PROPAGATION QUALITY INDICES
JULY 1980

DAY	TOKYO	NEW YORK	TEHERAN	OSLO	BRACKNELL
1	4.7	7.3	7.8	12.8	13.7
2	5.2	8.1	8.0	13.0	13.8
3	3.9	7.9	8.3	13.1	14.1
4	4.7	8.2	7.4	12.8	14.0
5	3.7	7.5	7.2	12.3	13.6
6	4.9	8.0	7.4	12.5	14.0
7	4.5	7.4	6.9	13.0	13.8
8	3.4	7.7	7.1	12.8	13.3
9	3.9	8.2	6.4	12.5	13.9
10	3.9	8.1	7.0	13.1	13.6
11	3.8	7.9	6.9	12.8	13.7
12	4.6	8.0	6.8	12.5	13.3
13	4.5	7.9	7.3	13.1	13.5
14	4.6	7.7	7.2	12.7	13.2
15	4.5	8.1	7.6	13.0	13.1
16	4.7	8.1	7.2	13.2	13.2
17	4.9	7.8	7.7	12.7	13.2
18	2.9	7.4	6.4	12.7	13.6
19	3.1	6.4	6.8	13.0	12.9
20	4.1	7.5	6.8	12.9	13.2
21	3.7	7.6	6.3	12.9	13.3
22	3.7	7.8	7.2	13.0	13.4
23	4.6	8.1	7.7	13.6	13.3
24	4.2	7.6	7.5	13.5	13.7
25	2.5	8.0	5.9	12.3	13.1
26	2.8	6.5	6.7	12.5	12.7
27	3.3	7.2	6.8	12.6	13.0
28	4.0	7.4	6.9	12.8	13.5
29	3.6	7.1	7.0	14.1	13.8
30	4.1	7.5	7.3	14.1	13.4
31	4.2	7.7	7.1	13.8	13.6
MEAN	4.0	7.7	7.1	13.0	13.5

SGD 433 Part I (Prompt)

LATE DATA

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SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JUNE 1980

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
01			LEAR				0314.3	0316.1	1				CONT
			LEAR				0530.2	0530.4	1				III
			PALE				1828.0	1830.4	1				V
			PALE				1839.9	1841.2	1				V
			PALE				1931.9	2117.0	1				B
			PALE				1931.9	2001.0	3				II
			SGMR				1934.1	1937.7	2				II
			PALE				2024.1	2039.0	2				S
			PALE				2250.4	2253.5	2				CONT
02			LEAR				0050.7	0052.5	1				V
			PALE				0112.2	0113.0	2				III
			LEAR				0112.2	0113.2	1				V
			LEAR				0144.0	0158.9	1				S
			LEAR				0200.7	0201.3	1				III
			PALE				0200.8	0201.1	1				III
			LEAR				0323.2	0323.6	1				V
			LEAR				0333.1	0427.6	1				S
			LEAR				0437.0	0520.1	1				S
			LEAR				0657.0	0700.5	1				CONT
			LEAR				0716.6	0928.0	1				B
			PALE				2059.4	2100.0	1				III
			PALE				2110.5	2111.3	2				III
			PALE				2121.8	2122.9	2				III
			LEAR				2355.8	2356.0	1				III
03			LEAR				0020.3	0020.5	1				III
			LEAR				0105.9	0106.3	1				V
			LEAR				0148.5	0148.9	1				III
			PALE				1713.0	1713.4	1				III
			PALE				1833.1	1834.1	1				III
			PALE				1947.6	1949.1	1				CONT
			PALE				2128.8	2136.2	3				CONT
			SGMR				2130.9	2131.1	1				III
			PALE				2140.2	2050.8	1				II
			PALE				2156.8	2245.0	1				IV
04			LEAR				0615.7	0616.1	1				CONT
			LEAR				0830.0	0918.0	1				S
			LEAR				0830.0	0928.0	1				B
			PALE				1741.5	1742.6	1				CONT
			PALE				2025.1	2026.4	1				CONT
05			PALE				0000.0	0504.0	1				B
			LEAR				0106.0	0106.2	1				III
			LEAR				0119.7	0120.2	1				CONT
			PALE				0246.9	0247.6	2				V
			LEAR				0247.0	0251.1	1				CONT
			LEAR				0353.0	0447.3	1				S
			LEAR				0851.0	0851.6	1				CONT
			PALE				2325.4	2326.0	2				III
06			LEAR				0058.5	0100.6	1				CONT
			LEAR				0116.8	0132.7	2				II
			LEAR				0211.8	0212.3	1				CONT
			LEAR				0240.3	0311.8	2				S
			LEAR				0311.8	0330.0	3				IV
			LEAR				0314.3	0337.2	1				II
			LEAR				0345.8	0346.5	2				CONT
			LEAR				0352.8	0410.0	1				CONT
			LEAR				0448.4	0510.1	1				S
			LEAR				0515.6	0519.2	1				CONT
			LEAR				0623.1	0625.5	1				CONT
			LEAR				0654.9	0655.7	2				CONT
			LEAR				0758.4	0801.2	1				CONT
			LEAR				0848.9	0849.4	1				CONT
			LEAR				0857.5	0858.1	2				CONT
			SGMR				1142.6	1142.8	3				III
			PALE				1926.8	1928.3	1				V
			PALE				2005.2	0216.0	1				B

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JUNE 1980

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
06			PALE				2334.8	2335.7	2				V
			LEAR				2334.9	2335.3	1				CONT
07			PALE				0116.6	0138.1	3				II
			PALE				0240.2	0249.6	2				CONT
			PALE				0254.8	0258.3	2				CONT
			PALE				0311.8	0400.1	3				V
			PALE				0345.8	0346.5	3				III
			PALE				1744.7	1744.8	1				III
08			LEAR				0021.8	0022.9	1				CONT
			PALE				0021.8	0022.8	1				III
			PALE				0424.5	0424.7	1				III
			LEAR				0424.5	0424.6	1				III
			LEAR				0727.2	0728.1	1				CONT
			PALE				1840.1	0504.0	2				B
			LEAR				2316.0	0928.0	1				B
09			LEAR				0011.2	0012.2	2				CONT
			PALE				0011.6	0012.1	3				III
			LEAR				0108.3	0109.0	2				CONT
			PALE				0250.0	0251.9	3				V
			LEAR				0251.0	0253.0	3				CONT
			LEAR				0450.7	0451.3	2				CONT
			LEAR				0550.7	0551.3	2				CONT
			LEAR				0559.4	0559.6	1				III
			PALE				1747.9	1750.4	1				CONT
			PALE				1756.4	1757.6	2				CONT
			PALE				1851.7	1853.4	3				CONT
			PALE				2001.4	2004.6	3				CONT
			PALE				2300.9	2303.0	3				V
10			LEAR				0041.8	0042.1	1				V
			LEAR				0048.0	0048.2	1				III
			LEAR				0125.4	0130.9	1				CONT
			LEAR				0151.2	0152.7	1				V
			LEAR				0202.4	0928.0	1				B
			PALE				1813.9	1815.3	3				CONT
			PALE				2156.0	2157.1	2				V
11			PALE				0121.7	0121.9	1				III
			PALE				0134.0	0135.1	1				V
			LEAR				0134.1	0135.0	1				CONT
			LEAR				0243.9	0244.1	1				III
			LEAR				0319.9	0321.0	2				V
			PALE				0319.9	0321.1	2				V
			LEAR				0342.9	0343.5	1				III
			LEAR				0607.4	0607.6	1				V
			PALE				2106.4	2106.6	1				III
			PALE				2142.8	2143.5	2				V
12			PALE				0034.5	0106.5	2				CONT
			PALE				0128.9	0130.1	2				V
			PALE				0253.7	0300.8	3				V
			SGMR				1339.9	1341.2	2				CONT
			SGMR				1517.5	1519.1	3				V
			PALE				1806.5	1806.9	1				V
			PALE				1843.8	1937.2	1				S
			PALE				2010.6	2014.4	1				CONT
			PALE				2028.4	2118.7	1				S
			PALE				2200.0	0504.0	1				B
			PALE				2222.8	2224.6	2				V
			PALE				2236.9	2239.9	3				V
			PALE				2241.1	2341.1	2				S
13			LEAR				0048.6	0127.5	1				S
			LEAR				0129.1	0130.0	1				V
			LEAR				0151.6	0156.7	2				CONT
			LEAR				0201.3	0201.9	1				V
			LEAR				0209.8	0254.1	1				S

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JUNE 1980

DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
13			LEAR				0254.8	0306.3	2				CONT
			LEAR				0338.3	0340.4	1				CONT
			LEAR				0421.2	0423.0	1				CONT
			LEAR				0546.5	0548.0	1				CONT
			LEAR				0740.7	0740.8	1				III
			LEAR				0740.7	0839.7	1				S
			LEAR				0905.7	0908.0	1				CONT
			PALE				1655.2	1659.1	1				CONT
			PALE				1700.0	1703.2	1				V
			PALE				1903.4	1926.6	2				S
			PALE				1951.7	1952.1	1				III
			SGMR				2113.8	2114.0	2				III
			PALE				2200.0	0504.0	1				B
14			LEAR				0018.8	0031.9	1				S
			LEAR				0148.5	0149.4	1				V
			LEAR				0210.5	0210.7	1				III
			LEAR				0323.6	0323.8	1				III
			LEAR				0336.8	0337.9	1				CONT
			LEAR				0353.0	0353.2	1				III
			LEAR				0605.0	0605.1	1				III
			LEAR				0632.5	0643.5	1				S
			PALE				1700.8	1701.8	1				V
15			LEAR				0433.0	0433.5	1				III
			PALE				1819.9	0504.0	1				B
16			LEAR				0228.4	0228.5	1				III
			LEAR				0611.9	0612.3	1				CONT
			PALE				1657.8	1757.8	1				S
17			PALE				1720.2	1720.4	1				III
			PALE				1901.4	1901.6	1				III
			PALE				2005.5	2005.6	1				III
			PALE				2013.5	2013.9	1				III
19			LEAR				0239.0	0246.2	1				S
20			PALE				0046.2	0046.9	1				V
			LEAR				0405.8	0406.9	1				V
			LEAR				0500.2	0500.5	1				V
			LEAR				0631.2	0631.4	1				III
21			LEAR				0008.1	0008.9	1				V
			PALE				0008.2	0009.0	2				III
			PALE				0039.0	0052.7	3				IV
			PALE				0052.7	0126.0	3				IV
			LEAR				0053.9	0059.4	2				II
			LEAR				0059.4	0930.0	1				B
			PALE				0148.0	0149.8	2				CONT
			LEAR				0148.2	0149.9	2				V
			LEAR				0333.9	0336.1	1				V
			LEAR				0648.0	0649.5	1				V
			PALE				1813.8	1814.3	1				III
			PALE				1858.9	1900.4	1				V
22			LEAR				0432.9	0434.2	1				CONT
			LEAR				0545.9	0547.3	2				V
			LEAR				0815.0	0816.7	1				CONT
			PALE				1900.8	1901.1	2				III
			PALE				1900.8	2223.7	1				CONT
			PALE				2349.0	2355.6	2				CONT
			LEAR				2355.0	2355.4	1				CONT
23			PALE				0020.5	0027.2	2				CONT
			PALE				0237.2	0246.2	2				CONT
			PALE				0340.3	0341.0	1				III
			LEAR				0605.3	0605.6	1				III
			LEAR				0737.3	0737.5	1				III
			LEAR				0756.6	0759.7	1				V

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JUNE 1980

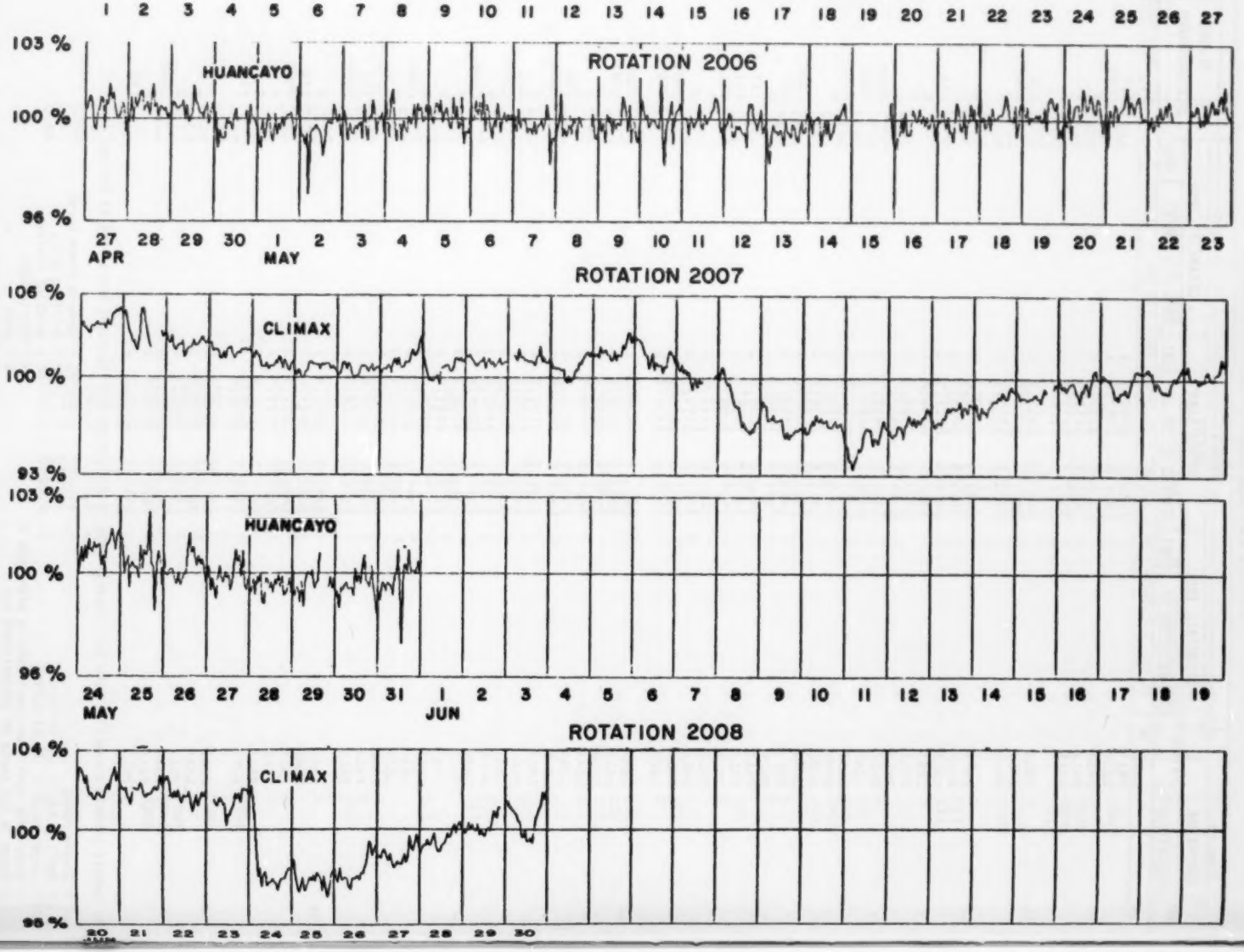
DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
23			PALE				1816.3	1816.6	1				III
			PALE				1840.5	1840.7	1				III
			PALE				1946.8	1947.9	1				CONT
			PALE				2138.1	2139.0	2				V
			PALE				2155.3	2155.9	1				V
			PALE				2157.3	2157.7	1				V
26			PALE				0127.2	0127.5	1				III
			PALE				2127.0	2128.5	1				CONT
			PALE				2332.6	2333.1	1				V
27			PALE				0009.4	0109.4	1				S
			PALE				0022.8	0023.2	2				V
			PALE				0210.9	0211.7	1				III
			LEAR				0302.8	0400.0	1				S
			PALE				0304.2	0304.7	2				V
			PALE				0317.0	0417.0	1				S
			PALE				0421.5	0424.2	2				CONT
			LEAR				0636.2	0644.8	2				CONT
			LEAR				0757.7	0759.1	1				CONT
			SGMR				1613.9	1614.3	1				V
			SGMR				1614.6	1620.3	3				IV
			SGMR				1630.0	1630.4	1				CONT
			PALE				1825.4	1826.1	1				III
			PALE				1937.9	1940.3	1				V
			PALE				2006.6	2007.0	2				III
			PALE				2057.7	2058.0	1				III
			PALE				2107.5	2108.2	1				III
			PALE				2147.0	2247.0	1				S
			PALE				2302.2	2305.0	2				V
			PALE				2331.1	2334.2	2				CONT
			LEAR				2331.1	2331.4	1				III
28			LEAR				0023.3	0026.0	1				CONT
			PALE				0023.3	0026.0	1				CONT
			PALE				0038.9	0039.4	2				V
			LEAR				0038.9	0039.3	1				V
			LEAR				0103.5	0103.7	1				III
			LEAR				0109.8	0111.5	1				CONT
			LEAR				0126.2	0156.9	1				S
			PALE				0126.3	0126.5	1				III
			LEAR				0144.0	0149.1	2				CONT
			PALE				0144.1	0148.9	3				V
			LEAR				0242.5	0249.8	2				CONT
			PALE				0242.7	0249.3	3				V
			LEAR				0258.5	0931.0	1				B
			PALE				0317.1	0328.9	3				S
			LEAR				0325.8	0329.9	2				CONT
			LEAR				0745.6	0803.4	2				S
			PALE				1845.3	1848.0	2				CONT
			PALE				1857.0	1857.9	1				III
			PALE				2116.5	2118.0	1				CONT
29			LEAR				0241.2	0931.0	1				B
			SGMR				1043.0	1043.0	1				III
			PALE				1822.3	1827.2	2				CONT
			PALE				1847.0	1947.0	1				S
			PALE				2211.7	2213.9	3				V
			SGMR				2211.8	2212.0	3				III
30			PALE				0018.6	0018.9	1				III
			LEAR				0137.5	0932.0	1				B
			PALE				0201.5	0300.5	1				B
			PALE				1823.8	1825.3	2				CONT
			PALE				1826.9	1828.9	2				V
			PALE				2013.3	2013.5	1				III

The symbols used in connection with the spectral type in describing the important bursts are as follows:

B = Single burst
G = Small group (< 10) of bursts
GG = Large group (> 10) of bursts
C = Underlying continuum (particularly with type I)
S = Storm in the sense of intermittent but apparently connected activity
N = Intermittent activity in this period
U = U-shaped burst of Type III
RS = Reverse slope burst
DP = Drifting pairs
DC = Drifting Chains
H = Herringbone
W = Weak
P = Pulsations
CONT = Continuum
UNCLF = Unclassified activity
FSTD = Fast drift

COSMIC RAY INDICES
(Neutron Monitors)

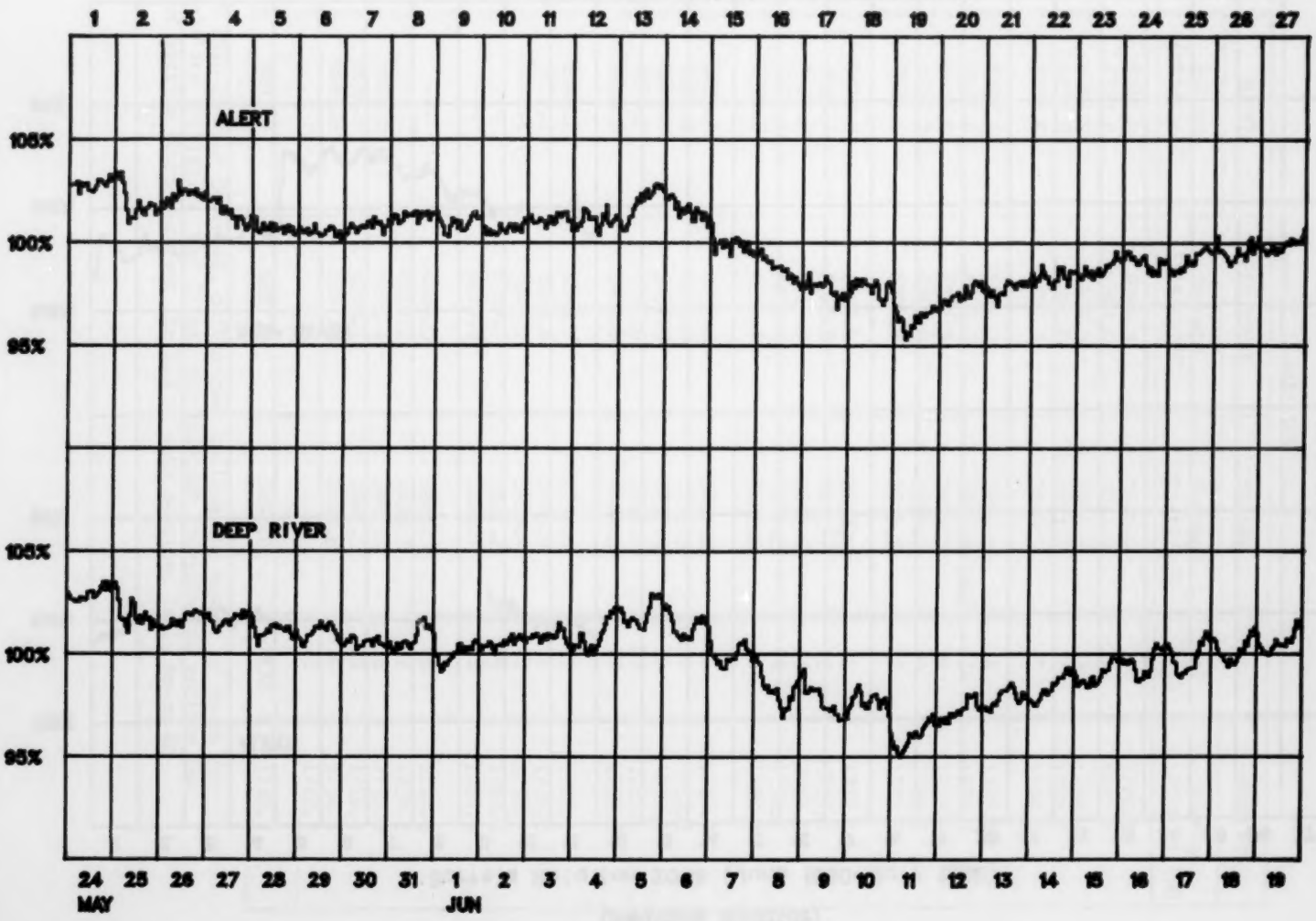
Bartels Rotation 2006 - 2008 (April - June 1980)



COSMIC RAY INDICES
(Neutron Monitor)

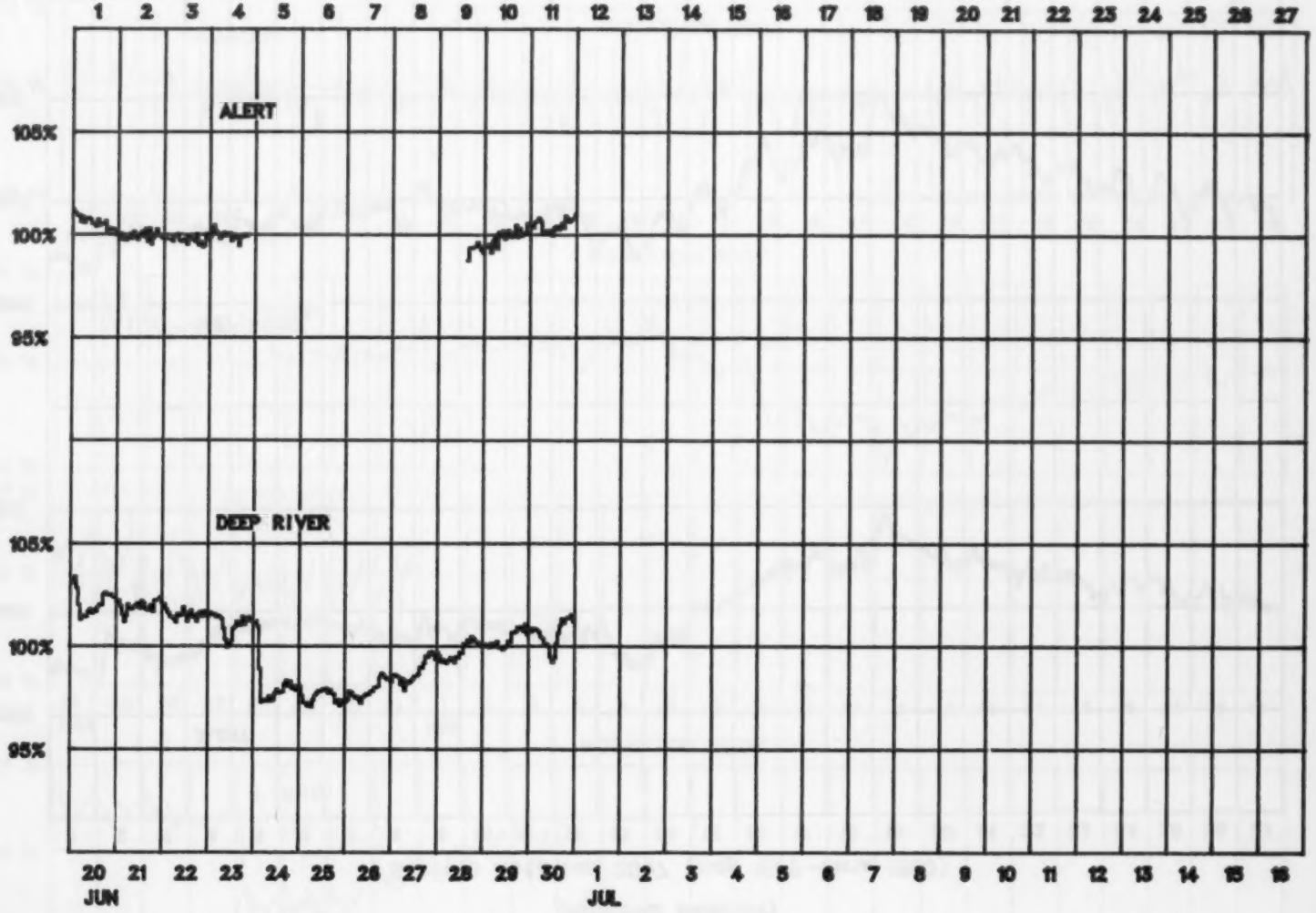
COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2007 (May 1980–June 1980)



COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2008 (June 1980–July 1980)



COSMIC RAY INDICES
(Neutron Monitors)

JUNE 1980

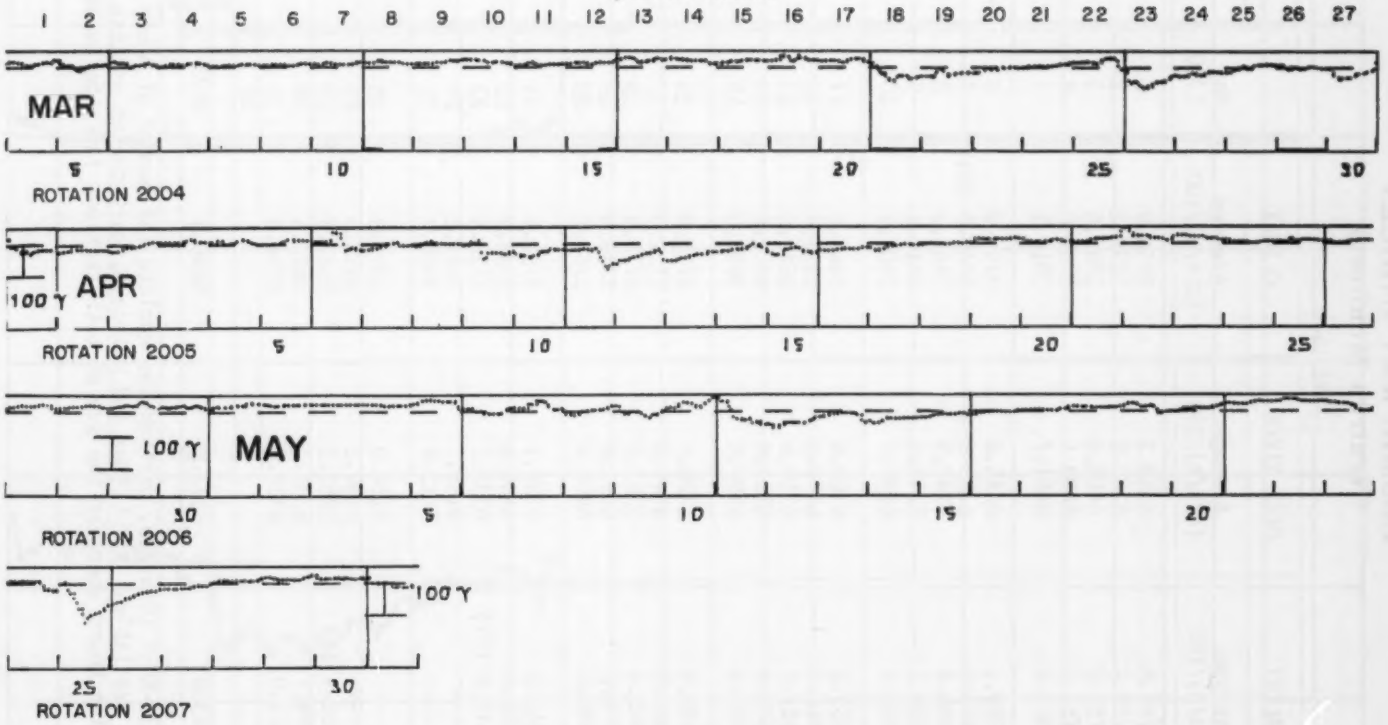
June 1980	ALERT Average (cts/h)/100	DEEP RIVER Average (cts/h)/300	CLIMAX Average (cts/h)/100	May 1980	HUANCAYO Average (cts/h) 100
1	6747.8	6358.3	3758.9	1	1728.8
2	6729.4	6388.9	3779.2	2	1723.8
3	6759.0	6409.5	3786.5	3	1729.9
4	6757.0	6408.5	3763.8	4	1732.2
5	6813.6	6481.7	3810.1	5	1734.0
6	6789.5	6445.6	3793.2	6	1733.4
7	6677.5	6355.2	3740.8 (38)	7	1727.0
8	6600.4	6247.3	3658.3	8	1727.5
9	6535.2	6215.6	3613.1	9	1729.5
10	6538.1	6206.7	3608.5	10	1732.5
11	6439.8	6100.6	3563.0	11	1732.4
12	6517.7	6179.5	3611.7	12	1729.3
13	6537.2	6219.6	3641.0	13	1723.6
14	6575.4	6251.4	3671.2	14	1730.5
15	6599.5	6290.4	3691.0	15	1728.3
16	6620.9	6326.8	3717.9	16	1729.3
17	6626.9	6345.0	3721.5	17	1732.3
18	6655.4	6367.8	3732.5	18	1735.4
19	6676.2	6392.0	3748.9	19	1735.8
20	6688.0	6403.5	3763.8	20	1738.8
21	6645.2	6388.7	3754.4	21	1739.1
22	6633.3	6365.8	3745.9	22	1735.3 (32)
23	6645.8 (21)	6335.1	3733.4	23	1739.7
24	---	6156.7	3617.2	24	1743.5
25	---	6113.6	3586.7	25	1733.5
26	---	6134.0	3605.3	26	1730.0
27	---	6190.2	3633.5	27	1724.2
28	6602.5 (9)	6252.3	3662.8	28	1718.0
29	6644.7	6288.1	3687.5	29	1719.4
30	6681.0	6307.0	3700.6	30	1718.3
				31	1722.7
MEAN	6643.8	6297.5	3695.8	MEAN	1730.3

For less than 24-hour coverage, partheneses enclose the number of hours for which data are available. For Climax and Huancayo, parentheses enclose the number of section hours whenever the sum of both sections falls below 40 hours.

GEOMAGNETIC ACTIVITY INDICES

Hourly Equatorial Dst

by Bartels Rotation



Note: Both the sensitivity indicator placed on the last day of the month and the zero reference level change from month to month.

HOURLY EQUATORIAL Dst VALUES (PROVISIONAL)

MAY 1980

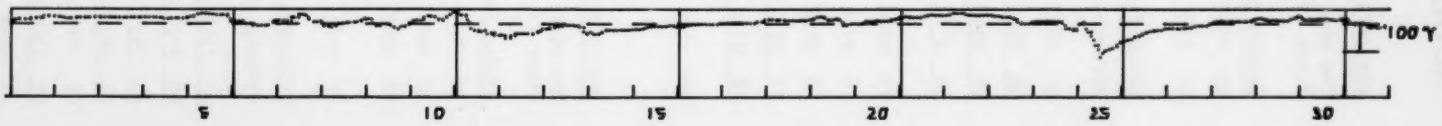
HOURLY EQUATORIAL Dst VALUES (PROVISIONAL)

MAY 1980

NASA/GODDARD SPACE FLIGHT CENTER

(Time-UT) (Units-Gammas)

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	12	12	9	13	16	11	10	14	14	13	14	13	18	20	18	16	19	16	16	25	27	24	19	19
2	19	18	16	17	16	15	13	12	14	16	15	17	20	20	19	18	19	20	20	18	18	20	21	20
3	19	20	20	20	18	17	17	20	18	15	15	15	17	18	18	20	18	19	19	21	21	20	18	19
4	21	22	21	21	21	19	18	18	16	17	14	12	14	15	12	15	18	17	16	15	16	15	15	18
5	22	24	23	23	27	32	33	34	36	36	31	30	29	29	27	25	29	30	30	28	28	31	20	11
6	3	5	6	3	5	7	6	-3	-6	-3	-2	-6	-12	-8	-7	-8	-9	-11	-11	-12	-6	2	7	10
7	11	12	11	10	7	5	4	7	21	22	20	19	32	31	30	28	23	16	9	1	1	1	2	8
8	5	-4	-13	-15	-14	-18	-16	-10	-6	-1	1	2	2	2	5	4	1	1	6	7	5	8	12	14
9	17	15	14	9	-4	-10	-14	-12	-8	-1	-2	-6	-8	-10	-12	-17	-19	-24	-22	-11	-9	-16	-8	-4
10	2	6	11	12	11	9	8	13	21	27	25	22	19	18	16	12	7	5	14	21	24	32	30	41
11	38	41	33	25	26	25	20	10	1	-22	-28	-26	-28	-32	-33	-27	-22	-29	-40	-36	-31	-33	-45	-43
12	-41	-38	-44	-46	-55	-55	-47	-42	-41	-35	-36	-36	-36	-35	-36	-36	-37	-40	-38	-35	-30	-28	-26	-24
13	-18	-16	-17	-17	-13	-14	-12	-9	-13	-11	-7	-9	-6	-5	-5	-5	-5	-8	-7	-7	-15	-18	-33	-39
14	-33	-29	-31	-40	-41	-36	-34	-31	-28	-23	-20	-22	-26	-27	-25	-23	-22	-25	-21	-22	-21	-23	-22	-20
15	-20	-18	-19	-20	-19	-16	-19	-13	-11	-12	-10	-9	-9	-10	-9	-9	-10	-12	-10	-7	-6	-6	-10	-15
16	-16	-15	-12	-11	-10	-6	-3	-4	-3	-2	-2	0	-2	-1	-1	-1	-2	-2	-3	-3	-2	-2	-2	1
17	3	3	2	2	3	4	3	3	4	4	5	4	2	1	3	2	1	1	1	6	7	7	7	9
18	13	15	14	13	12	12	12	12	10	9	7	6	10	11	10	11	10	5	8	12	12	11	11	13
19	14	14	18	21	23	24	24	22	14	9	8	10	12	14	17	10	8	0	-9	-8	-3	-2	-1	0
20	-2	-5	-4	-2	2	6	9	6	5	6	9	11	11	9	8	7	5	6	9	9	13	14	14	16
21	21	25	22	22	23	21	17	16	17	18	22	21	22	25	27	29	29	31	31	29	29	30	27	29
22	28	30	29	30	32	37	34	33	34	37	34	31	28	24	25	28	26	23	24	25	25	26	26	29
23	30	27	22	20	21	20	21	19	17	17	18	16	20	14	12	10	2	-3	-6	-4	-2	-3	-4	0
24	7	9	6	4	4	4	5	9	9	7	3	2	7	8	5	4	-3	-11	-22	-22	-21	-23	-28	-28
25	-18	-2	0	5	-7	-23	-33	-31	-46	-61	-79	-77	-93	-119	-101	-93	-91	-88	-87	-84	-82	-78	-72	-65
26	-62	-62	-57	-56	-55	-53	-53	-46	-43	-43	-40	-38	-34	-32	-29	-27	-26	-26	-23	-21	-24	-27	-23	-18
27	-15	-15	-17	-21	-20	-19	-20	-19	-18	-16	-13	-14	-14	-14	-14	-11	-8	-8	-7	-8	-9	-9	-8	-3
28	0	3	6	9	8	9	8	8	7	7	7	8	6	4	6	7	4	3	4	6	6	6	10	13
29	15	18	17	16	15	11	7	6	7	7	8	8	6	5	6	6	5	3	5	13	16	18	20	23
30	25	24	11	9	9	10	10	10	9	10	14	12	13	13	10	11	11	11	8	7	11	13	14	6
31	16	17	6	2	-3	-3	-7	-4	-1	1	1	-1	-5	-12	-16	-11	-18	-19	-16	-14	-13	-7	-16	-18



SUDDEN COMMENCEMENTS AND SOLAR FLARE EFFECTS

MAY 1980

PRELIMINARY REPORT ON RAPID MAGNETIC VARIATIONS

The meaning of the station symbols is given in the IAGA-Bulletin nr. 32h, page 106-116. Times of ssc are mean values.

Sudden commencements followed by a magnetic storm or a period of storminess (ssc)

29 1832 A: ESK FUR FRD BNG; B: WNG WIT HAD DOU VIC AQU EBR TOL MPO; C: NGK CZT KGL

31 2137 A: DOU VIC FUR; B: WNG WIT HAD AQU EBR TOL BNG? DUM; C: NGK KNY CZT KGL

Solar-flare effects (sfe)

Effects confirmed by ionospheric or solar observations are underlined.

01 1913 - 1940 TOL (bs: VIC)

08 0056 - 0108 HAZ

08 0649 - 0708 WNG

09 0712 - 0731 WNG MMB AQU KAK HAZ KNY (ssc: A: COI - bs: A: MPO)

13 0920 - .... EBR

16 0134 - 0138 HAZ

16 2232 - 2239 HAZ

17 0733 - 0802 KAK HAZ KNY (b: A: MPO)

18 0110 - 0125 HAZ

23 1207 - 1248 NGK TOL BNG (ssc: C: EBR)

26 0715 - 0727 SOD

26 1136 - .... BNG

28 1946 - 2011 KAK HAZ

28 2204 - 2220 KAK

28 2338 - 2355 KAK

29 0509 - 0542 KAK HAZ

30 0652 - .... BNG (bp: B: MPO)

30 1129 - 1210 NGK

JUNE 1980

PRELIMINARY REPORT ON RAPID MAGNETIC VARIATIONS

The meaning of the station symbols is given in the IAGA-Bulletin nr. 32h, page 106-116. Times of ssc are mean values.

Sudden commencements followed by a magnetic storm or a period of storminess (ssc)

06 2236 A: WIT DOU FUR EBR COI; B: WNG NGK HAZ HUA MPO KGL DUM (si: B: TOL)

10 1627 A: WIT DOU FUR EBR COI; B: WNG MMB AQU TOL? KAK HAZ HUA MPO; C: NGK KNY CZT DUM

24 0248 A: SOD ESK WNG DOU VIC FUR EBR COI TOL FRD HUA MPO; B: WIT HAD MMB AQU KAK; C: NGK CZT KGL DUM

26 0129 B: DOU FUR HUA KGL DUM; C: WNG (si: B: EBR MPO; C: TOL)

Solar-flare effects (sfe)

Effects confirmed by ionospheric or solar observations are underlined.

03 1142 - 1230 WNG

03 2129 - 2152 HAZ KNY

04 0654 - 0720 MMB KAK HAZ KNY

04 2259 - 2320 MMB KAK KNY

06 1555 - 1610 HUA? (si: C: TOL)

07 0312 - 0330 KAK KNY

14 0354 - 0422 HAZ

21 0117 - 0200 MMB HAZ KNY

23 0212 - 0231 HAZ

23 0355 - 0420 MMB HAZ KNY

23 2311 - 2330 MMB KNY

23 2336 - 2400 MMB KAK KNY

25 1550 - 1600 HUA

28 0320 - 0351 KAK HAZ KNY

29 0233 - 0320 MMB KAK HAZ KNY

29 1822 - 1834 HUA

C 1.457
e.433
s2

SEPTEMBER 1980 NUMBER 433 -- Part N

NOV 5 - 1980

Solar-Geophysical Data comprehensive reports

Data for March 1980 & Miscellanea

Explanation of Data Reports Issued as Number 426 (Supplement) February 1980

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Solar - Geophysical Data

NO. 433 SEPTEMBER 1980

Part II (Comprehensive Reports)

DATA FOR
AUGUST 1980
JULY 1980

NATIONAL GEOPHYSICAL AND SOLAR - TERRESTRIAL DATA CENTER
BOULDER, COLORADO

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SOLAR-GEOPHYSICAL DATA

No. 433

Issued in two parts

Helen E. Coffey, Editor

J. Virginia Lincoln, Chief
Solar-Terrestrial Physics Division

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DETAILED COVERAGE FOR 1979-80 PUBLISHED IN "SOLAR-GEOPHYSICAL DATA"

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A.2a	Zurich Provisional Relative Sunspot Numbers Rz	421A 11	422A 11	423A 11	424A 11	425A 11	426A 10	427A 9	428A 10	429A 9	430A 11	431A 11	432A 11	433A 11
A.2b	Zurich Final Sunspot Numbers Rz	419A 9	420A 9	421A 9	422A 9	423A 9								
A.2c	American Relative Sunspot Numbers RA	421A 11	422A 11	423A 11	424A 11	425A 11	426A 10	427A 9	428A 10	429A 9	430A 11	431A 11	432A 11	433A 11
A.3a	Mt. Wilson Magnetograms	422A 52	423A 50	424A 50	425A 48	426A 50	427A 50	427A 44	429A 42	430A 52	431A 48	432A 50	433A 48	
A.3b	Mt. Wilson Magnetic Characteristics of Sunspots	422A 11	423A110	424A112	425A108	428A150	427A112	428A102	429A104	430A112	431A110	432A110	433A110	
A.3c	Kitt Peak Magnetograms	422A 52	423A 50	424A 50	425A 48	426A 50	427A 50	428A 44	429A 42	430A 52	431A 48	432A 50	433A 48	
A.3d	Mean Solar Magnetic Field (Stanford)	421A 40	422A 42	423A 40	424A 40	425A 36	426A 38	427A 38	428A 34	429A 35	430A 44	431A 41	432A 42	433A 40
A.3e	Stanford Magnetograms	422A 52	423A 50	424A 50	425A 48	426A 50	427A 50	428A 44	429A 42	430A 52	431A 48	432A 50	433A 48	
A.4	H-alpha Filtergrams	422A 52	423A 50	424A 50	425A 48	426A 50	427A 50	428A 44	429A 42	430A 52	431A 48	432A 50	433A 48	
A.5	Calcium Plage Drawings - Mt. Wilson	422A 52	423A 50	424A 50	425A 48	426A 50	427A 50	428A 44	429A 42	430A 52	431A 48	432A 50	433A 48	
A.6a	Calcium Plage (Mt. Wilson) and Sunspot Regions	422A114	423A110	424A112	425A108	428A150	427A112	428A102	429A104	430A112	431A110	432A110	433A110	
A.6b	Mt. Wilson Daily Calcium Plage Indices	422A129	423A124	424A125	425A121	426A112	427A122	428A112	429A115	430A123	431A121	432A128	433A127	
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A.8aa	2800 MHz - Daily Values of Solar Flux (ARO-Ottawa)	421A 11	422A 11	423A 11	424A 11	425A 11	426A 10	427A 9	428A 10	429A 9	430A 11	431A 11	432A 11	433A 11
A.8ac	2800 MHz - Daily Values of Adj. Solar Flux (ARO-Ottawa)	421A 11	422A 11	423A 11	424A 11	425A 11	426A 10	427A 9	428A 10	429A 9	430A 11	431A 11	432A 11	433A 11
A.8g	Daily Values of Adjusted Solar Flux (AFGL)	422B 04	422A 11	423A 11	424A 11	425A 11	426A 10	427A 9	428A 10	429A 9	430A 11	431A 11	432A 11	433A 11
A.9cb	8.6 mm Radio Maps of the Sun (NOSC - La Posta)	422A 52	423A 50	424A 50	425A 48	426A 50	427A 50	428A 44	429A 42	430A 52	431A 48		433A 48	
A.9d	2 cm Radio Maps of the Sun (NOSC - La Posta)	422A 52	423A 50	424A 50	425A 48	426A 50	427A 50	428A 44	429A 42	430A 52	431A 48		433A 48	
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A.10c	21 cm East-West Solar Scans (Flears)	421A 28	422A 28	423A 30	424A 28	425A 27	426A 26	427A 26	429A150	429A 25	430A 29	431A 28	432A 27	433A 25
A.10d	43 cm East-West Solar Scans (Flears)	421A 29	422A 29	423A 31	424A 29	425A 28	426A 27	427A 27	429A151	429A 26	430A 30	431A 29	432A 26	433A 26
A.10e	10.7 cm East-West Solar Scans (Ottawa-ARO)	421A 27	422A 27	423A 29	424A 27	425A 26	426A 25	427A 25	428A 22	430A175	430A 28	431A 27	432A 26	433A 24
A.10f	3 cm East-West Solar Scans (Toyokawa)	421A 26	422A 26	423A 28	424A 26	425A 25	426A 24	427A 24	428A 21	429A 23	430A 27	431A 26	432A 25	433A 23
A.11g	Solar X-ray (SMS/GOES) (graphs)	426B 24	427B 28	428B 24	429B 26	430B 16	431B 27	432B 30	433B 26					
A.12bb	Cosmic Ray Protons (Pioneers 8 & 9)	---	424B 39	---	---	---	426A 32	427A 33	428A 28	429A 32	431A160	431A 38	432A 38	---
A.12e	Energetic Solar Particles (IMP H & J)	427B 42	430B 24	429B 32	429B 37									
A.13a	Solar Wind (Pioneers 6 & 7)	---	---	---	---	---	---	427A 32	428A 27	429A 32	---	431A 38	432A 39	433A 36
A.13ab	Solar Wind (Pioneers 8 & 9)	---	424B 39	---	---	---	426A 32	427A 33	428A 28	429A 32	431A160	431A 38	432A 38	433A 37
A.13d	Solar Wind from IPS Measurements	422B 89	422A 39	424B 36	424A 37	426A146	426A 34	427A 35	428A 30	430A164	430A 37	431A 36	432A 34	433A 31
A.13e	Solar Plasma (IMP H & J)	426B 23	427B 27	428B 23	429B 25	430B 15	432B 36	432B 29						
A.13f	Solar Wind (Pioneer 12 (Venus))	421A 35	422A 37	423A 37	424A 36	425A 32	426A 33	427A 34	428A 29	429A 33	431A161	431A 39	432A 39	433A 37
A.17	Interplanetary Magnetic Field (Pioneer 9)	---	424B 39	---	---	---	426A 32	427A 33	428A 28	429A 32	431A160	431A 38	432A 38	433A 37
A.17	Interplanetary Magnetic Field (Pioneer 12)		423B 73	424B 38	425B 29	426A116	---	---	428A119	430A127	431A125	432A132	433A131	
A.17c	Inferred IP Magnetic Field	421A 38	422A 40	423A 38	424A 38	425A 34	426A 36	427A 36	428A 32	430A 42	430A 42	432A 40	432A 40	433A 38
A.18	Interplanetary Electric Field (Pioneer 9)	---	424B 39	---	---	---	426A 32	427A 33	428A 28	429A 32	431A160	431A 38	432A138	---
B.	IONOSPHERIC (AND RADIO WAVE PROPAGATION) PHENOMENA													
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C.1a	Optical Observations Flares	421A 14	422A 14	423A 15	424A 15	425A 15	426A 15	427A 14	428A 15	429A 14	430A 16	431A 16	432A 16	433A 16
C.1ba	Optical Observations Flares (Standardized Data)													
C.1d	Flare Patrol Observations	421A 25	423B 72	423A 26	424A 24	425A 24	427A158	427A 22	---	---	430A 46	431A 25	432A 23	433A 21
C.1d	Flare Patrol Observations													
C.1e	Flare Indices (by day)													
C.1f	Flare Indices (by Region)													
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	Solar Radio Waves - Fixed Frequencies - Selected	421A 30	422A 30	423A 32	424A 30	425A 29	426A 28	427A 28	428A 23	429A 27	430A 31	431A 30	432A 29	433A 27
C.4a	Solar Radio Spectral Obs. (Fort Davis)	423B 78	423A143	426A149	426A153	426A117	427A126	428A116	429A120	430A128	431A126	432A133	433A132	
C.4d	Solar Radio Spectral Obs. (Culgoora)	422A149	423A143	424A130	425A125	426A117	427A126	428A116	429A120	430A128	431A126	432A133	433A132	
C.4e	Solar Radio Spectral Obs. (Weissenau)	422A149	423A143	424A130	425A125	426A117	427A126	428A116	429A120	430A128	431A126	432A133		
C.4f	Solar Radio Spectral Obs. (Sagamore Hill)	---	---	---	---	---	---	---	429A120	430A128	431A126	432A158	433A132	
C.4h	Solar Radio Spectral Obs. (Dwingeloo)	422A149	424A143	425A130	426A125	427A117	427A126	428A116	429A120	430A128	431A126	432A133	433A132	
C.4i	Solar Radio Spectral Obs. (Bleien)	422A149	423A143	424A130	425A125	426A117	427A126	428A116	429A120	430A128	431A126	432A133		
C.4j	Solar Radio Spectral Obs. (Manila)	422A149	---	424A130	425A125	426A117	427A126	---						
C.4k	Solar Radio Spectral Obs. (Learmonth)	422A149	423A143		425A125		427A126	428A116	429A120	430A128	431A126	433A158	433A132	
C.4l	Solar Radio Spectral Obs. (Palehua)	422A149	423A143		425A125		427A126	428A116	429A120	430A128	431A126	433A158	433A132	
C.5a	Solar X-ray (SMS/GOES) (graphs)	426B 24	427B 28	428B 24	429B 26	430B 16	431B 27	432B 30	433B 26					
C.6	Sudden Ionospheric Disturbances	422A130	423A125	424A126	425A122	426A113	427A123	428A113	429A116	430A124	431A122	432A129	433A128	
D.	GEOMAGNETIC AND MAGNETOSPHERIC PHENOMENA													
D.1a	Geomagnetic Indices Kp, Km, Ks, Km, Ap, aa, Cp	422A170	423A166	424A147	425A144	426A133	427A148	429A154	429A142	430A155	431A151	432A158	433A150	
D.1ba	27-day Chart of Kp Indices	422A172	423A168	424A149	425A146	426A135	427A150	428A137	429A144	430A157	431A153	432A160	433A152	
D.1c	27-day Chart of C9	426A136	426A136	426A136	426A136	426A136								
D.1ca	aa graph 1868 - present	426A137	426A137	426A137	426A137	426A137								
D.1d	Principal Magnetic Storms	422A175	423A171	424A152	425A149	426A140	427A151	428A138	429A145	430A158	431A154	432A161	433A153	
D.1e	Reduced Magnetograms													
D.1f	Sudden Commencement and Solar Flare Effects	422A177	423A172	425B 33	425A150	427A164	427A152	431A168	431A168	431A169	433A168	433A168		
D.1g	Equatorial Indices Dst	422A174	423A170	424A151	425A148	426A139	428A147	429A155	431A166	431A167	433A167			
D.1h	Geomagnetic Substorm Log (Boulder)	421A 41	422A 43	423A 42	424A 41	425A 38	426A 40	427A 40	428A 36	429A 37	430A 45	431A 42	432A 43	433A 41
F.	COSMIC RAYS													
F.1a	Cosmic Ray Neutron Counts (Deep River)	422A165	423A161	425B 32	427A159	427A159	428A146	429A153	429A137	430A154	432A170	433A165		
F.1b	Cosmic Ray Neutron Counts (Climax)	422A165	423A161	425B 32	425A143	426A132	428A146	428A134	430A167	430A154	431A150	433A165	433A147	
F.1e	Cosmic Ray Neutron Counts (Alert)	422A165	423A161	425B 32	427A159	427A159	428A146	429A153	429A137	430A154	432A170	433A165		
F.1h	Cosmic Ray Neutron Counts (Thule)	422A165	423A161	424A146	425A143	426A132	427A147	428A134	429A137	430A154	431A150	432A155	433A147	
F.1i	Cosmic Ray Neutron Counts (Kiel)	422A165	423A161	427A159	425A143	426A132	427A147	428A134	429A137	430A154	431A150	432A155	433A147	
F.1j	Cosmic Ray Neutron Counts (Tokyo)	422A165	423A161	427A159	425A143	426A132	427A147	428A134	429A137	430A154	431A150	430A155	433A147	
F.1k	Cosmic Ray Neutron Counts (Kula)						---	---	---	---	---	---	---	
F.1l	Cosmic Ray Neutron Counts (Huancayo)	423B 81	425B 32	425B 32	426A177	427A159	428A146	430A167	430A167	431A163	433A165			
H.	MISCELLANEOUS													
H.60	IUWDS Alert Decisions	421A 5	422A 4	423A 4	424A 4	425A 4	426A 4	427A 4	428A 4	429A 4	430A 5	431A 5	432A 5	433A 5
H.62	Abbreviated Calendar Record													

Notes:

"422A 52" listed under 1979 Aug means that the sunspot drawings for Aug 1979 were contained in *Solar-Geophysical Data* Number 422 - Part I, beginning on page 52.

A = Part I, B = Part II.

----- = no data available.
blank = data not yet received.

SGD 433 Part II (Comprehensive)

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NOTE ON DELAY OF GROUPED SOLAR FLARE DATA:

The grouped solar flare data have again been delayed by another month due to a much needed vacation taken by our Meudon colleagues. We again ask your patience in this critical situation.

For researchers who need the comprehensive solar flare data more promptly, NGSDC has available "preliminary" listings from July through October 1979. These complete tabulations lack the final Meudon corrections, and thus will not be published until we receive these. Nevertheless, printouts for the July-October 1979 period are available on request with the stipulation that they be recognized as "preliminary" when used in research projects. A fee may be charged for reproducing these data if a large demand ensues. Please contact the editor, Helen Coffey, for copies of these listings [Phone: (303) 497-6223; Telex: SOLTERWARN BLDR 45897].

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

MARCH 1980

DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	POLARIZATION OR REMARKS
				UT	UT	MINUTES	PEAK	MEAN		
01	2000	TYKW	5 S	0403.5	0403.8	.8	3	1		
	1000	TYKW	5 S	0536.8	0536.9	.4	7	2		
	600	UCCL	40 F	0848.0	0858	35.0	6			
	2800	OTTA	1 S	1523.0	1523.2	1.0	2.0	1.0		
	9400	HUAN	S	1746.3	1802.8	23.9	5.7	3.4		R
	2800	OTTA	20 GRF	1840.0	1846.5	20.0	2.0	1.0		
	2695	PENT	20 GRF	2205.0	2230	50.0	2.8	1.4		
02	2000	TYKW	21 GRF	0150.0	0315	240.0	12	4		
	3750	TYKW	21 GRF	0230.0	0318	200.0	16	5		
	9400	TYKW	20 GRF	0240.0	0315	160.0	10	3		
	1000	TYKW	45 C	0306.0	0307.2	4.0	9	1.5		
	500	HIRA	46 C	0306.6	0308.5	3.5	15	6		0
	3750	TYKW	45 C	0445.0	0447.2	25.0	6	1		
	2000	TYKW	45 C	0446.0	0447	12.0	2	1		
	1000	TYKW	45 C	0525.3	0525.7	1.0	8	1.5		
	260	ONDR	41 F	0800.0E	0832.2	105.0D	14	1		
	600	UCCL	1 S	0904.5	0905	1.0	3	1		
	6100	KISV		0937.0	0942.5		4			
	6100	KISV	45 C	0937.0	0938.5	13.0	2			
	2950	GORK	1 S	0937.8	0938.6	5.8	9.7	4.5		
	113	POTS	42 SER	0941.4	0943.0	1.7	400	10		III
	9100	GORK	1 S	0942.0	0942.8	6.0	5	2		
	810	KRAK	8 S	0942.5	0942.7	.5	160			
	536	ONDR	8 S	0942.7	0942.7	.3	37			
	930	BORD	8 S	0943.0	0943.2	.2	23	2		
	9100	GORK	20 GRF	1025.4	1033.4	28.5	4	2		
	2950	GORK	1 S	1036.1	1039.7	6.9	7.2	3.6		
	3100	CRIM	1 S	1039.0	1039.5	1.0	7	2		
	9400	HUAN	S	1152.0	1202.0	20.6	8.6	2.8		R
	9400	HUAN	S	1221.9	1230.8	18.0	6.8	4.4		0
	600	UCCL	3 S	1501.5	1501.6	.3	20	10		
	2800	OTTA	20 GRF	1506.0	1509.5	28.0	3.2	1.2		
	7000	SAOP	45 C	1632.0	1637.0	5.0	644.0			10R
	2650	DWIN	45 C	1633.0	1637	7.0	90	50		SUNSET
	600	UCCL	41 F	1633.0	1637	7.0	50	7		
	10715	DWIN	45 C	1633.0	1638	10.0	250	150		SUNSET
	930	BORD	46 C	1633.0	1636.8	9.0	64	7		
	9400	HUAN	C	1633.2	1637.2	6.4	814.0	261.4		R
	8400	BERN	4	1633.4	1637.3	20.0D	225.0D			ONLY PAPER REC
	11800	BERN	4	1633.4	1637.3	20.0D	500.0			ONLY PAPER REC
	10400	BERN	4	1633.4	1637.3	20.0D	225.0D			ONLY PAPER REC
	35000	BERN	4	1633.4	1637.3	20.0D	1200.0			ONLY PAPER REC
	19600	BERN	4	1633.4	1637.3	20.0D	1255.0			ONLY PAPER REC
	2800	OTTA	4 S/F	1633.6	1637.3	5.4	119.0	34.4		
	2800	OTTA	30 PBI	1639.0	1639	10.0	4.0	1.4		
	9400	HUAN	PBI	1639.6	1639.6	32.7	42.8	9.9		R
	2800	OTTA	2 S/F	1640.1	1641.2	1.4	5.4	2.0		
	2800	OTTA	1 S	1905.5	1905.8	1.0	2.0	1.0		
	2695	PENT	20 GRF	2110.0	2215	130.0	3.4	2.6		
03	2800	OTTA	20 GRF	1615.0	1655	90.0	2.4	1.2		
	2800	OTTA	21 GRF	1853.0	1915	85.0	3.2	2.0		
	9400	HUAN	S	1934.5	1945.0	31.7	6.6	2.2		0
	2800	OTTA	1 S	1941.0	1942	10.0	4.2	2.0		
	2800	OTTA	4 S/F	2050.3	2051.4	5.0	14.8	4.0		
	9400	HUAN	S	2050.6	2051.4	3.2	44.5	14.1		R
04	3750	TYKW	5 S	0122.0	0122.1	.5	3	1		
	3750	TYKW	5 S	0258.0	0258.4	2.0	7	2		
	9400	TYKW	5 S	0258.0	0258.4	1.5	8	3		
	2000	TYKW	5 S	0258.0	0258.5	3.0	3	.8		
	2000	TYKW	21 GRF	0335.0	0350	150.0	4	2		
	9400	TYKW	21 GRF	0335.0	0355	110.0	6	3		
	3750	TYKW	21 GRF	0335.0	0355	150.0	5.5	2.5		
	17000	NOBE	20 GRF	0342.7	0401.4	48.0	13			0
	9400	TYKW	5 S	0414.0	0415.3	3.0	3	1		
	3750	TYKW	5 S	0414.0	0415.3	3.0	1.2	.3		
	237	TRST	41 F	0741.0	0745.8	7.1	110			3L
	9400	TYKW	5 S	0745.0	0745.7	1.5	13	4		
	3750	TYKW	5 S	0745.0	0745.7	1.5	6	2		
	327	TRST	42 SER	0745.1	0745.4	.8	59			6L
	650	GORK	1 S	0745.1	0746.3	1.5	5.5	2.7		
	2000	TYKW	5 S	0745.3	0745.7	1.0	3	1		
	9100	GORK	1 S	0745.4	0746.0	1.9	14	3.5		
	950	GORK	1 S	0745.5	0745.9	1.4	2.6	1.8		
	2950	GORK	1 S	0745.5	0746.0	1.8	3.1	1.5		
	600	UCCL	1 S	0745.5	0746	1.0	4	2		
	234	POTS	4 S/F	0745.6	0745.8	.3	100	15		III
	113	POTS	42 SER	0759.2	0801.8	2.9	150	4		III
	204	IZMI	41 F	0759.5	0805.0	12.5	135			
	204	IZMI	41 F	0851.7	0854.0U	5.0	295 U			
	204	IZMI	41 F	1000.5	1003.0U	4.5	295 D			
	260	ONDR	42 SER	1003.0	1019.5	28.0	47	3		

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

MARCH 1980

DAY OF MONTH	FREQUENCY	STATION	TYPE		STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	POLARIZATION OR REMARKS
					UT	UT	MINUTES	PEAK	MEAN		
04	33	UPIC	4	S/F	1010.5	1010.7	.5				
	29	UPIC	4	S/F	1010.5	1011.0	.8				
	6100	KISV	4	S/F	1018.0	1020	4.0	12			
	536	ONDR	2	S/F	1018.3	1020	4.0	20	4		
	200	GORK	46	C	1018.8	1020.5	4.2	150			
	3000	POTS	4	S/F	1018.8	1019.7	4.5	14			
	200	GORK			1018.8	1021.9		150	D		
	9100	GORK	3	S	1019.0	1019.5	3.2	90	14		
	15000	KISV	8	S	1019.0	1020	2.0	62			
	1470	POTS	4	S/F	1019.0	1019.8	3.5	11			
	9500	POTS	4	S/F	1019.0	1019.8	2.5	77			
	950	GORK	3	S	1019.0	1020.1	2.5	54	27		
	10715	DWIN	1	S	1019.0	1019	2.0	30	20		
	127	TORN	4	S/F	1019.0	1019.6	1.8	140	30		
	2650	DWIN	1	S	1019.0	1019	2.0	10	5		
	237	TRST	42	SER	1019.1	1019.7	1.9	63			1L
	11800	BERN	3		1019.1	1019.6	1.5	55.0			ONLY PAPER REC
	19600	BERN	3		1019.1	1019.6	1.5	70.0			ONLY PAPER REC
	35000	BERN	3		1019.1	1019.6	1.5	90.0			ONLY PAPER REC
	2950	GORK	1	S	1019.1	1019.6	4.1	10			
	10400	BERN	3		1019.1	1019.6	1.5	55.0			ONLY PAPER REC
	8400	BERN	3		1019.1	1019.6	1.5	45.0			ONLY PAPER REC
	327	TRST	45	C	1019.2	1019.6	.6	220	44		1R
	113	POTS	4	S/F	1019.4	1019.5	.6	150	25		III
	600	UCCL	1	S	1019.5	1020	1.0	6	3		
	260	ONDR	42	SER	1226.0	1350	107.0	94			
	2800	OTTA	21	GRF	1250.0	1358	430.0	12.4	6.0		
	9400	HUAN		S	1300.7	1358.0	88.1	12.3	6.7		0
	810	KRAK	8	S	1311.7	1311.7	.1	8			
	7000	SAOP	4	S/F	1335.0	1357.5	25.0	23.0			0
	1470	POTS	23	GRF	1337.0	1340.5	53.0	9			
	3000	POTS	22	GRF	1338.0	1358	52.0U	12			
	2800	OTTA	1	S	1348.5	1349.8	2.5	5.4	1.8		
	1470	POTS	4	S/F	1348.5	1349.8	2.5	22			
	228	HARS	45	C	1348.7	1349.5	2.1	170	65		
	808	ONDR	4	S/F	1348.8	1349.8	2.5	60	24		
	536	ONDR	4	S/F	1348.8	1349.9	2.5	72	28		
	930	BORD	45	C	1348.8	1349.6	3.0	85	20		
	237	TRST	45	C	1349.0	1349.9	1.9	200	60		1L,OSCILLATIONS
	600	UCCL	4	S/F	1349.0	1349.8	2.5	27	10		
	430	KRAK	4	S/F	1349.0	1350.0	2.0	310	120		
	327	TRST	45	C	1349.1	1349.7	1.7	500	170		6L,OSCILLATIONS
	408	TRST	45	C	1349.1	1349.7	1.4	280	92		0,OSCILLATIONS
	234	POTS	8	S	1349.2	1349.9	1.8	150	50		III
	3000	POTS	3	S	1349.4	1349.9	1.1	13			
	810	KRAK	4	S/F	1349.5	1350.0	1.7	70	35		
	113	POTS	4	S/F	1413.4	1413.6	.3	200	30		
	327	TRST	42	SER	1413.4	1413.7	.3	100			0
	237	TRST	42	SER	1413.4	1413.7	.7	81			1L
	9400	HUAN		S	1557.1	1611.2	20.2	7.0	2.5		0
	600	UCCL	3	S	1634.0	1634.1	.3	15	7		
05	9400	TYKW	20	GRF	0200.0	0210	40.0	2	1		
	3750	TYKW	20	GRF	0200.0	0220	60.0	2	1		
	2000	TYKW	20	GRF	0200.0	0201	40.0	3	.7		
	2000	TYKW	20	GRF	0330.0	0355	90.0	2	1		
	3750	TYKW	20	GRF	0330.0	0355	60.0	2	1		
	260	ONDR	41	F	0811.0	0836.6	31.0	19	2		
	536	ONDR	4	S/F	1006.5	1007.2	1.5	46	2		
	260	ONDR	2	S/F	1006.7	1007.2	1.5	11	2.3		
	237	TRST	42	SER	1006.8	1007.4	1.5	68			3R
	430	KRAK	4	S/F	1006.8	1007.0	1.0	110	50		
	327	TRST	42	SER	1006.9	1007.2	.6	97			14L
	810	KRAK	8	S	1007.5	1007.5	.1	10			
	810	KRAK	8	S	1033.7	1033.7	.1	10			
	536	ONDR	8	S	1052.7	1052.7	.2	22			
	260	ONDR	8	S	1252.9	1252.9	.2	16			
	260	ONDR	8	S	1302.2	1302.2	.2	35			
	228	HARS	45	C	1338.4	1339.4	1.4	85	30		
	2800	OTTA	1	S	1525.0	1526.2	3.0	2.4	1.2		
	2800	OTTA	20	GRF	1720.0	1750	60.0	2.0	1.0		
	9400	HUAN		S	1943.3	1951.7	21.1	3.3	2.0		0
	9400	HUAN		S	1947.7	1948.0	1.6	8.2	3.9		0
	1000	TYKW	45	C	2207.0	2208.1	3.0	12	1		
	2800	OTTA	2	S/F	2207.0	2207.7	1.0	4.8			
	2000	TYKW	45	C	2207.2	2207.7	1.0	21	3		
	2695	PENT	1	S	2232.3	2233.5	2.0	3.4	1.7		
	3750	TYKW	5	S	2232.5	2233.7	3.0	3	1		
	2000	TYKW	5	S	2232.5	2233.0	3.0	5	1.5		
	9400	TYKW	5	S	2244.5	2245.2	1.5	5	1.5		
	2000	TYKW	5	S	2328.0	2330.9	13.0	12	5		
	2695	PENT	20	GRF	2328.0	2331	13.0	12.0	4.6		
	1000	TYKW	45	C	2329.0	2334.7	18.0	13	2.5		
	3750	TYKW	5	S	2329.0	2330.9	10.0	4	1		
06	2000	TYKW	45	C	0123.5	0124.3	1.5	3	1		

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

MARCH 1980

DAY OF MONTH	FREQUENCY	STATION	TYPE		STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	POLARIZATION OR REMARKS
06	1000	TYKW	45	C	0123.8	0124.1	1.0	3.5	1		
	3750	TYKW	5	S	0123.8	0124.1	1.0	4	1.5		
	1000	TYKW	45	C	0245.5	0246.8	2.0	12	1.5		
	2000	TYKW	45	C	0354.0	0355.5	6.0	10	1.5		
	3750	TYKW	45	C	0354.0	0355.4	2.0	8	2		
	1000	TYKW	42	SER	0354.0	0356.7	5.0	6	1		
	3750	TYKW	30	PBI	0356.0		21.0	1.5	1.5		
	2000	TYKW	5	S	0412.0	0420.5	15.0	15	5		
	3750	TYKW	5	S	0417.0	0421.3	10.0	18	8		
	9400	TYKW	20	GRF	0420.0	0430	80.0	6	2		
	3750	TYKW	29	PBI	0427.0		90.0	8	4		
	2000	TYKW	29	PBI	0427.0		80.0	4	2		
	9100	GORK	1	S	0601.4U	0602.0	1.5	5	2		
	2950	GORK	1	S	0601.4	0601.7	1.4	4.7	2.3		
	950	GORK	1	S	0601.5	0602.1	1.2	6	3		
	1000	TYKW	5	S	0644.0	0644.2	.5	5	1.5		
	1000	TYKW	45	C	0701.5	0702.6	1.5	12	2		
	3750	TYKW	5	S	0701.5	0701.7	1.5	4	1.5		
	2000	TYKW	5	S	0701.5	0701.7	1.5	5	1.5		
	3000	POTS	1	S	0701.5	0702.0	1.5	4.2			
	6100	KISV	8	S	0701.5	0702	3.0	5			
	9500	POTS	1	S	0701.5	0701.5	.8	4.6			
	1470	POTS	1	S	0701.5	0702.5	1.5	2.3			
	430	KRAK	22	GRF	1047.0		23.5	16	6		
	536	ONDR	41	F	1047.0	1055.2	19.0	8	3.3		
	950	GORK	46	C	1047.8	1050.0	11.5	78			
	950	GORK			1047.8	1054.9		64			
	650	GORK	46	C	1048.0	1048.1	12.0	14			
	650	GORK			1048.0	1054.7		28			
	810	KRAK	41	F	1048.8	1051.0	11.0	70	25		
	810	KRAK			1048.8	1054.8		110			
	810	KRAK			1048.8	1057.5		80			
	808	ONDR	46	C	1049.0	1054	11.0	46	22		
	930	BORD	46	C	1049.0	1051	11.0	90	14		
	600	UCCL	40	F	1050.0	1055	10.0	9	2		
	260	ONDR	4	S/F	1053.0	1055	3.0	29	4		
	9500	POTS	20	GRF	1053.0	1122	48.0	7.7			
	3100	CRIM	1	S	1053.0	1054.0	2.0	11	3		
	1470	POTS	4	S/F	1053.7	1054.5	6.3	36			
	9100	GORK	20	GRF	1053.9	1054.6	37.0	4.5	2		
	237	TRST	42	SER	1053.9	1054.3	1.0	89			3L
	33	UPIC	4	S/F	1053.9	1054.1	1.0				
	29	UPIC	4	S/F	1054.0	1054.2	1.0				
	6100	KISV	4	S/F	1054.0	1054.5	2.0	4			
	3000	POTS	3	S	1054.0	1054.5	2.5	8.4			
	200	GORK	2	S/F	1054.0	1054.5	1.2	40 D			
	2950	GORK	1	S	1054.0	1054.6	5.6	7.2	3.0		
	100	GORK	4	S/F	1054.1	1054.5	1.0	90			
	234	POTS	4	S/F	1054.2	1054.4	.7	100	15		III
	930	BORD	8	S	1224.5	1224.5	.1	14	1		
	536	ONDR	42	SER	1318.0	1338.8	95.0	32			
	9400	HUAN		S	1335.4	1336.0	2.2	8.0	6.1		R
	228	HARS	45	C	1342.2	1342.2	1.2	440	200 U		
	260	ONDR	8	S	1454.0	1454	.2	18			
	2800	OTTA	1	S	1537.5	1538.7	1.5	2.0	1.0		
	3750	TYKW	5	S	2331.0	2332.1	4.0	4	1		
	2000	TYKW	5	S	2331.5	2332.1	1.5	1	.3		
	2695	PENT	1	S	2332.0	2332	1.0	1.8	.9		
07	3750	TYKW	20	GRF	0455.0	0530	90.0	3	1.5		
	2000	TYKW	21	GRF	0455.0	0505	90.0	3	1.5		
	2800	OTTA	20	GRF	1725.0	1755	155.0	6.8	3.4		
08	127	TORN	43	NS	0832.0	1021.6	298.0	40	.5U		V2
	100	GORK	43	NS	0851.0		108.0		5		
	100	HIRA	43	NS	2155.0	2250	250.0	45	5		
	113	POTS	8	S	0726.4	0726.5	.1E	150	50		
	260	ONDR	42	SER	1016.5	1119.5	65.0	14			
	113	POTS	41	F	1017.4	1017.4	.2	350	35		
	237	TRST	41	F	1119.2	1121.0	3.4	64			4R
	228	HARS	45	C	1120.4	1121.0	2.0	55	15		
	237	TRST	42	SER	1446.5	1446.8	.6	73			10L,OSCILLATION
	327	TRST	42	SER	1446.6	1446.8	.3	120			25R,OSCILLATION
	408	TRST	42	SER	1446.6	1446.9	.4	110			30L,OSCILLATION
	2800	OTTA	20	GRF	1530.0	1615	80.0	1.8	.9		
09	3750	TYKW	5	S	0417.0	0418.1	9.0	4	1		
	2000	TYKW	5	S	0417.0	0418	10.0	1	.5		
	9400	TYKW	5	S	0424.3	0424.5	.7	7	2		
	3750	TYKW	45	C	0435.5	0436.4	3.5	20	3		
	2000	TYKW	45	C	0435.5	0436.5	4.0	18	6		
	1000	TYKW	45	C	0436.0	0436.6	2.0	125	25		
	260	ONDR	45	C	0912.0	0913.8	6.0	16	1.5		
	100	GORK	8	S	0912.4	0913 U	1.9	220 D			
	29	UPIC	45	C	0912.6	0913.8	2.1				

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DAY OF MONTH	FREQUENCY	STATION	TYPE		STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} MEAN	INT	POLARIZATION OR REMARKS
09	33	UPIC	45	C	0912.6	0913.0	2.0				
	810	KRAK	8	S	1152.5	1152.7	.3	8			
	430	KRAK	8	S	1153.0	1153.0	.1	6			
	127	TORN			1200.3	1202.5		230			
	127	TORN	42	SER	1200.3	1201.0	3.3	90			
	113	POTS	41	F	1200.8	1202.5	2.6	1000	25		III
	29	UPIC	45	C	1200.9	1201.0	3.5				
	260	ONDR	45	C	1202.0	1203	1.0	14	4		
	29	UPIC	45	C	1238.4	1239.0	.9				
	430	KRAK	8	S	1249.5	1249.8	.5	10			
	810	KRAK	8	S	1250.0	1250.0	.1	5			
	430	KRAK	8	S	1257.0	1257.0	.1	9			
	810	KRAK	8	S	1257.3	1257.3	.1	2			
	237	TRST	41	F	1359.0	1359.9	2.0	180			4R
	234	POTS	4	S/F	1359.8	1400.0	.7	220	30		III
	113	POTS	4	S/F	1359.9	1400.1	1.4	230	40		III
	228	HARS	45	C	1459.2	1459.2	2.8	165	40		
	2800	OTTA	20	GRF	1740.0	1830	110.0	5.8	3.8		
	2800	OTTA	240	R	2018.0	2030	12.0	3.2	2.0		
10	810	KRAK	8	S	1041.7	1041.7	.1	25 U			
	430	KRAK	8	S	1041.7	1041.7	.1	62 U			
	260	ONDR	45	C	1058.0	1058.4	4.0	29	4.5		
	930	BORD	8	S	1059.7	1059.7	.1	14	1		
	930	BORD	41	F	1155.0	1155.5	.5	14	2		
	127	TORN			1158.4	1200.8		70			
	127	TORN	42	SER	1158.4	1159.1	3.1	30			
	237	TRST	42	SER	1158.5	1159.1	1.1	120			5R
	234	POTS	4	S/F	1158.8	1159.2	.5	100	10		III
	33	UPIC	4	S/F	1242.0U	1242.0U	.6U				
	29	UPIC	4	S/F	1242.5	1242.6	.6				
	9400	HUAN		S	1459.1	1510.0	24.2	9.4	3.8		R
	930	BORD	8	S	1538.9	1538.9	.1	14	1		
	2800	OTTA	20	GRF	2050.0	2103	25.0	2.6	1.3		
	3750	TYKW	5	S	2226.0	2227.4	4.0	10	4		
	2695	PENT	1	S	2226.2	2227.5	4.0	7.8	3.6		
11	127	TORN	43	NS	0956.0	1128.8	204.0	20	.5U		VO
	2000	TYKW	45	C	0053.5	0054.2	2.0	6	1		
	100	HIRA	46	C	0053.7	0054.8	2.3	610	100		
	2695	PENT	8	S	0054.0	0054.3	.5	6.2	3.0		
	260	ONDR	2	S/F	1018.5	1018.5	.7	12			
	2650	DWIN	41	F	1100.0	1113	16.0	20	10		
	930	BORD	8	S	1101.2	1101.2	.1	16	1		
	930	BORD	41	F	1157.6	1157.6	.6	29	2		
	113	POTS	8	S	1242.3	1242.4	.2	700	250		III
	237	TRST	42	SER	1544.0	1544.5	.5	95			13R
	327	TRST	42	SER	1544.2	1544.5	.3	200			70R
	2800	OTTA	8	S	2028.0	2028.2	.5	1.6	.8		
12	3750	TYKW	21	GRF	0210.0	0213.2	40.0	3	1		
	650	GORK	4	S/F	0945.5	0946.9	2.6	25	5		
	950	GORK	1	S	0945.5	0945.6	1.6	4	2		
	2650	DWIN	45	C	1103.0	1103	4.0	530	300		
	2650	DWIN	45	C	1110.0	1114	5.0	530	100		
	536	ONDR	8	S	1324.7	1324.7	.2	24			
13	2000	TYKW	5	S	0659.0	0700.4	4.0	1.5	.5		
	1000	TYKW	5	S	0700.0	0700.4	1.0	1	.3		
	3750	TYKW	5	S	0700.0	0700.4	1.0	2	.5		
	204	IZMI	41	F	0813.0	0817.0	7.0	277			
	113	POTS	4	S/F	1014.2	1014.2	.1	200	10		III
	260	ONDR	42	SER	1032.5	1114	50.0	34			
	930	BORD	41	F	1159.4	1159.5	.7	39	2		
	260	ONDR	8	S	1228.8	1228.8	.2	29			
	9400	HUAN		S	1646.3	1650.3	6.7	15.6	5.7		O
	2800	OTTA	20	GRF	2035.0	2038	20.0	2.0	1.0		
14	930	BORD	41	F	1055.3	1055.4	.1	19	1		
	3750	TYKW	5	S	2258.5	2300.5	2.5	7	3		
	2000	TYKW	5	S	2259.0	2300.0	7.0	5	2		
	2695	PENT	1	S	2259.0	2300	6.0	8.4	4.0		
	3750	TYKW	29	PBI	2301.0		35.0	3	1		
15	1000	TYKW	5	S	0231.3	0231.5	.5	3	1		
	127	TORN	46	C	0905.1	0908.9	5.7	200	10		
	237	TRST	41	F	0907.0	0910.2	3.5	53			O
	33	UPIC	45	C	0908.6	0908.7	2.3				
	113	POTS	4	S/F	0908.6	0908.9	1.7	280	15		III
	260	ONDR	45	C	0908.7	0908.7	2.0	20	1		
	29	UPIC	45	C	0909.0	0909.2	1.5				
	33	UPIC	2	S/F	1128.8	1129.1	.7				
	29	UPIC	2	S/F	1128.8	1129.1	.6				
	113	POTS	4	S/F	1128.8	1129.0	.3	130	25		III
	600	UCCL	8	S	1727.0	1727.2	.4	90	40		

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DAY OF MONTH	FREQUENCY	STATION	TYPE		STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	POLARIZATION OR REMARKS
					UT	UT	MINUTES	PEAK	MEAN		
15	2695	PENT	20	GRF	2200.0	2220	135.0	3.4	1.7		
17	260	ONDR	42	SER	1051.0	1052	55.0	28			
	113	POTS	8	S	1100.0	1100.0	.1	280	25		III
	930	BORD	8	S	1229.8	1229.8	.1	21	1		
18	430	KRAK			0952.5	0955.5		440 D			
	430	KRAK	48	C	0952.5	0954.0U	5.0	440 D	110		
	260	ONDR	2	S/F	1026.8	1027.8	2.0	10	2		
	650	GORK	3	S	1033.2	1033.4	.5	31	15		
	430	KRAK	7	C	1155.5	1156.2	2.0	29 U	13		
	430	KRAK			1155.5	1157.0		37			
	810	KRAK	8	S	1155.8	1155.8	.1	36 U			
	810	KRAK	8	S	1156.7	1156.7	.1	18 U			
	930	BORD	41	F	1535.6	1535.8	1.6	56	3		
	2800	OTTA	21	GRF	1535.7	1537	20.0	2.8	2.4		
	2800	OTTA	40	F	1539.9	1540	3.0	4.2			
	930	BORD	41	F	1541.5	1541.9	1.6	26	4		
19	1000	TYKW	45	C	0319.4	0319.8	2.5	25	5		
	2000	TYKW	45	C	0319.4	0320.3	2.5	6	1.5		
	3750	TYKW	5	S	0319.5	0319.9	1.5	3	1		
	9400	TYKW	5	S	0319.5	0319.8	1.5	4	1		
	606	MANI	4	S/F	0319.5	0319.9	1.0	32.4	10.8		
	5730	IRKU	1	S	0319.5	0319.9	1.0	4			L
	1415	MANI	1	S	0319.6	0320.0	1.0	8.4	2.8		
	2695	MANI	1	S	0319.7	0320.0	.8	3.8	1.3		
	9100	GORK	1	S	0522.9	0524.2	4.4	24			
	5730	IRKU	2	S	0523.0	0524.0	3.0	16			L
	6100	KISV	45	C	0523.0	0524.5	3.0	31			
	3750	TYKW	45	C	0523.0	0524.3	5.0	18	2.5		
	500	HIRA	46	C	0523.0	0524.0	2.6	80	15		WR
	9400	TYKW	45	C	0523.0	0524.3	2.0	26	3		
	700	SYDN	45	C	0523.0	0524.3	4.1				
	1000	TYKW	45	C	0523.0	0524.5	3.0	33	7		
	2000	TYKW	45	C	0523.0	0524.4	3.0	24	6		
	1400	SYDN	45	C	0523.2	0524.4	3.0				
	606	MANI	4	S/F	0523.2	0523.3	2.8	166.5	31.5		
	650	GORK			0523.2	0525.5		11			
	650	GORK	46	C	0523.2	0524.5	2.4	43			
	950	GORK			0523.4	0525.3		16			
	950	GORK	46	C	0523.4	0524.2	2.0	24			
	2950	GORK	3	S	0523.6	0524.2	2.1	24	12		
	200	GORK	2	S/F	0523.9	0524.0	.5	25			
	1415	MANI	4	S/F	0524.0	0524.6	2.2	23.2	7.7		
	2695	MANI	4	S/F	0524.0	0524.5	2.0	26.7	8.9		
	100	GORK	4	S/F	0524.1	0524.2	.3	100			
	6100	KISV	29	PBI	0526.0	0526	6.0	6			
	408	TRST	42	SER	0726.9	0727.0	.2	85			1R
	327	TRST	42	SER	0726.9	0727.0	.3	230			4L
	237	TRST	42	SER	0726.9	0727.1	.7	210			5L
	237	TRST	41	F	0735.5	0736.0	2.0	380			4L
	327	TRST	41	F	0735.6	0737.4	1.9	320			0
	408	TRST	41	F	0735.8	0737.4	1.7	200			0
	430	KRAK	46	C	0804.0	0807.0	5.5	435 D	80		
	430	KRAK			0804.0	0809.0		370			
	35000	BERN	46		0805.0U	0807.0U	2.0E	50.0			ONLY PAPER REC
	2650	DWIN	2	S/F	0805.0	0806	4.0	60	30		
	10715	DWIN	2	S/F	0805.0	0806	4.0	50	25		
	950	GORK	4	S/F	0805.1	0807.2	4.9	130			
	650	GORK	4	S/F	0805.2	0806.8U	2.5	60 D			
	19600	BERN	46		0805.3	0806.6	2.0U	160.0			ONLY PAPER REC
	11800	BERN	46		0805.3	0806.6	9.0	150.0			ONLY PAPER REC
	10400	BERN	46		0805.3	0906.6	9.0	120.0			ONLY PAPER REC
	8400	BERN	46		0805.3	0806.6	9.0	90.0			ONLY PAPER REC
	6100	KISV	45	C	0805.5	0806.2	5.0	90			
	2000	TYKW	45	C	0805.5	0806.9	4.0	60	10		
	3750	TYKW	45	C	0805.5	0806.7	3.0	115	20		
	1000	TYKW	45	C	0805.5	0806.9	3.0	170	30		
	9400	TYKW	45	C	0805.5	0806.7	3.0	115	30		
	606	MANI	4	S/F	0805.6	0806.8	2.4	333.0	72.0		
	9100	GORK	4	S/F	0805.7	0806.6	9.2	130			
	930	BORD	45	C	0805.7	0806.7	2.8	162	25		
	17000	NOBE	7	S	0805.8	0806.6	2.0D	148			R
	500	HIRA	46	S	0805.8	0806.9	2.0	300	60		WR
	408	TRST	41	F	0805.8	0806.8	3.5	930			9R
	2695	MANI	4	S/F	0805.8	0806.7	4.2	50.8	16.9		
	810	KRAK	3	S	0805.8	0806.7	2.3	250	80		
	2950	GORK	3	S	0805.9	0806.6	4.0	58	25		
	237	TRST	41	F	0805.9	0806.8	4.5	370			11R,VAR POL
	536	ONDR	45	C	0806.0	0807	4.0	117	34		
	600	UCCL	4	S/F	0806.0	0807	2.0	140	30		
	260	ONDR	42	SER	0806.0	0809.5	110.0	216	6		
	808	ONDR	4	S/F	0806.0	0807.3	2.5	167	56		
	9500	POTS	4	S/F	0806.0	0806.5	4.0	106			

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DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	POLARIZATION OR REMARKS
19	1470	POTS	4 S/F	0806.0	0807.3	3.0	46			
	1415	MANI	4 S/F	0806.0	0807.5	4.0	61.0	20.3		
	4995	MANI	4 S/F	0806.0	0806.7	5.0	65.1	21.7		
	3000	POTS	4 S/F	0806.0	0806.5	3.0	64			
	8800	MANI	4 S/F	0806.2	0806.7	3.0	104.4	34.8		
	204	IZMI	41 F	0806.5	0810.0	4.5	275			
	234	POTS	42 SER	0806.7	0806.7	2.9	575	3		III
	200	GORK		0806.7	0808.8		40 D			
	100	GORK	8 S	0806.7	0806.8	.4	150			
	200	GORK	46 C	0806.7	0806.8	2.8	40 D			
	29	UPIC	3 S	0806.7	0807.0	.4				
	33	UPIC	8 S	0806.7	0806.9	.6				
	327	TRST	41 F	0806.7	0808.7	2.9	560			O
	3100	CRIM	3 S	0824.5	0825.0	1.0	33	11		
	3100	CRIM	3 S	0906.0	0907.0	3.0	47	15		
	536	ONDR	42 SER	0920.0	0920.5	158.0	46			
	430	KRAK	8 S	0920.2	0920.5	.5	100			
	810	KRAK	8 S	0920.2	0920.2	.1	23			
	930	BORD	8 S	1102.3	1102.3	.2	23	1		
	2800	OTTA	20 GRF	1228.0	1245	55.0	2.4	1.5		
	2800	OTTA	21 GRF	1420.0	1445	80.0D	5.2			
	808	ONDR	45 C	1436.0	1439.8	5.5	132	31		
	536	ONDR	46 C	1436.5	1440	10.0	45	8		
	3000	POTS	4 S/F	1436.5	1440.3	7.5	30			
	7000	SAOP	4 S/F	1436.7	1440.4	17.0	16.0			O
	9400	HUAN	S	1436.8	1440.4	29.8	8.7	4.3		O
	113	POTS	41 F	1436.8	1440.3	6.6	450	10		III
	2800	OTTA	4 S/F	1436.8	1440.3	7.0	25.8	8.6		
	1470	POTS	4 S/F	1437.0	1440.3	6.0	54			
	930	BORD	45 C	1437.0	1439.7	5.0	109	20		
	2650	DWIN	2 S/F	1437.0	1440	6.0	20	10		
	127	TORN	47 GB	1438.4	1440.2	3.0	630 U	120 U		
	600	UCCL	4 S/F	1439.0	1440	2.0	36	15		
	33	UPIC	4 S/F	1439.8	1440.1	1.2				
	29	UPIC	4 S/F	1439.8	1440.5	1.1				
	9500	POTS		1440.5E	1440.5		8			
	260	ONDR	4 S/F	1449.5	1450	2.5	44	16		
	2800	OTTA	21 GRF	1725.0	1830	125.0	3.0	2.0		
	7000	SAOP	45 C	1731.2	1737.5	15.0	31.0			11R
	9400	HUAN	S	1733.5	1739.6	23.8	7.0	3.2		R
	9400	HUAN	S	1736.0	1737.4	2.7	17.4	9.6		R
	2800	OTTA	45 C	1736.0	1737.5	2.5	5.8	2.8		
	2800	OTTA	21 GRF	1945.0	2003	60.0	4.6			
	2800	OTTA	3 S	1946.0	1948.7	7.0	10.6	3.5		
	2800	OTTA	3 S	1955.5	1958.2	6.0	11.6	3.8		
	3750	TYKW	20 GRF	2257.0	2310	60.0	3	1.5		
	1000	TYKW	45 C	2304.5	2304.7	1.0	11	2.5		
20	3750	TYKW	20 GRF	0115.0	0128	60.0	4	1		
	9400	TYKW	20 GRF	0115.0	0130	35.0	2	1		
	2000	TYKW	45 C	0120.0	0128.0	25.0	3.5	.7		
	1000	TYKW	45 C	0124.0	0128.0	8.0	8	1		
	2000	TYKW	20 GRF	0532.0	0540	60.0	2.5	1.5		
	3750	TYKW	21 GRF	0532.0	0550	70.0	6	2.5		
	1000	TYKW	45 C	0534.5	0539.0	8.0	9	1.5		
	9400	TYKW	20 GRF	0535.0	0550	60.0	4	2		
	950	GORK	2 S/F	0536.0	0539.3	4.7	10			
	650	GORK		0536.2	0540.5		16			
	650	GORK	46 C	0536.2	0538.9	6.2	24	8		
	3750	TYKW	5 S	0548.8	0549.0	.7	14	3		
	2950	GORK	1 S	0848.0	0848.7	1.0	3.1	1.5		
	430	KRAK	5 S	0927.0	0928.2U	2.5	420 D	240 U		
	930	BORD	8 S	1056.2	1056.2	.2	20	2		
	2800	OTTA	20 GRF	1445.0	1454	20.0	1.8	.9		
	930	BORD	46 C	1519.6	1520.2	.6	20	3		
	930	BORD	8 S	1651.2	1651.2	.1	20	1		
	2800	OTTA	20 GRF	1845.0	1910	100.0	3.2	2.6		
	2800	OTTA	21 GRF	2030.0	2050	150.0	2.4	1.2		
	2800	OTTA	1 S	2043.2	2043.5	1.5	1.8	.9		
21	2000	TYKW	45 C	0133.0	0134.7	8.0	10	2		
	1000	TYKW	45 C	0133.0	0136.0	6.0	10	3.5		
	100	HIRA	46 C	0133.5	0133.9	4.7	150	26		WL
	200	HIRA	46 C	0133.6	0134.7	4.0	42	19		O
	9400	TYKW	5 S	0134.0	0135	3.0	2	1		
	3750	TYKW	5 S	0134.0	0135.3	15.0	6	1		
	5730	IRKU	2 S	0715.0	0717.6	4.0	18			L
	930	BORD	8 S	1057.6	1057.6	.2	28	2		
	430	KRAK	2 S/F	1332.7	1333.3	1.0	50	26		
	1470	POTS	4 S/F	1355.5	1356.6	1.5	15			
	536	ONDR	8 S	1405.2	1405.2	.2	18			
	260	ONDR	8 S	1405.3	1405.3	.2	50			
	536	ONDR	8 S	1421.8	1421.8	.2	14			
	260	ONDR	8 S	1422.0	1422	.2	45			
	2800	OTTA	20 GRF	1720.0	1830	110.0	2.6	1.3		

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DAY OF MONTH	FREQUENCY	STATION	TYPE		STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	POLARIZATION OR REMARKS
21	2800	OTTA	20	GRF	1955.0	2017	55.0	2.2	1.1		
22	3750	TYKW	5	S	0102.4	0102.8	1.0	1	.3		
	650	GORK	1	S	0819.5	0820.2	1.4	9	4		
	930	BORD	46	C	0819.6	0820.4	1.3	35	5		
	950	GORK	4	S/F	0819.9	0820.5	1.3	21			
	3000	POTS	8	S	0820.0	0820.5	.7	3.1			
	1470	POTS	8	S	0820.0	0820.2	1.0	7.4			
	2950	GORK	1	S	0820.3	0820.4	.6	1.5			
	260	ONDR	8	S	0950.7	0950.7	.2	27			
	113	POTS	4	S/F	0950.9	0950.9	.1	120	10		III
	3100	CRIM	1	S	1128.0	1128.5	5.0	10	3		
	260	ONDR	8	S	1307.8	1307.8	.2	22			
	536	ONDR	8	S	1308.0	1308	.2	39			
	9400	HUAN		S	1447.1	1501.2	44.2	5.2	1.6		R
	2800	OTTA	20	GRF	1454.0	1456.5	55.0	3.2	1.6		
	9400	HUAN		S	1657.8	1658.7	1.2	26.0	7.5		0
	2800	OTTA	240	R	1820.0	1835	15.0	4.2	2.1		
	9400	HUAN		S	1953.5	2002.1	19.1	8.6	6.0		0
	9400	HUAN		S	1958.0	1958.7	1.2	12.1	6.2		R
	2800	OTTA	20	GRF	2015.0	2030	55.0	2.2	1.4		
23	3750	TYKW	5	S	0116.0	0117	3.0	1	.4		
	1470	POTS	1	S	1207.0	1207.7	2.0	4.8			
	2800	OTTA	4	S/F	1207.2	1207.4	1.3	16.2	3.8		
	3000	POTS	3	S	1207.4	1207.5	.8	6.9			
	3000	POTS			1207.4	1208.8		6.9			
	930	BORD	41	F	1207.5	1207.7	.5	36	2		
	600	UCCL	4	S/F	1207.5	1207.7	.4				
	9400	HUAN		S	1548.1	1554.0	14.9	9.4	3.5		R
	2800	OTTA	46F	C	1655.0	1657.8	15.0	25.8	10.8		
	7000	SAOP	20	GRF	1656.7			15.0			0
	9400	HUAN		S	1656.8	1705.6	26.5	10.9	7.2		0
	930	BORD	46	C	1657.2	1657.8	1.5	21	3		
	600	UCCL	2	S/F	1657.5	1658.5	2.0				
	2800	OTTA	29	PBI	1710.0	1710	20.0	4.4	2.2		
24	260	ONDR	44	NS	0936.0E		330.0D	19			
	3750	TYKW	21	GRF	0005.0	0010	35.0	2	1		
	1000	TYKW	45	C	0028.8	0029.3	1.5	3	1		
	2000	TYKW	5	S	0028.8	0029.1	1.0	1.5	.5		
	3750	TYKW	5	S	0028.9	0029.3	1.0	5	1		
	1000	TYKW	42	SER	0216.8	0219.9	3.5	7	1		
	2000	TYKW	45	C	0217.0	0217.9	3.5	2	.5		
	2000	TYKW	5	S	0225.3	0225.5	1.0	1.5	.5		
	3750	TYKW	5	S	0225.3	0225.6	.5	3	1		
	1000	TYKW	8	S	0225.4	0225.4	.1	4	2 U		
	6100	KISV	3	S	0804.0	0805.5	3.0	6			
	810	KRAK	8	S	0804.5	0804.8	.5	155			
	9400	TYKW	5	S	0804.5	0805	1.5	4	2		
	3750	TYKW	5	S	0804.5	0805.3	2.0	4	1		
	9100	GORK	1	S	0804.6	0805.3	1.4	6	3		
	650	GORK	2	S/F	0804.6	0804.8	1.3	23	6		
	204	IZMI	8	S	0957.5	0957.5	.5	125	75		
	33	UPIC	4	S/F	0957.7	0957.9	.6				
	29	UPIC	4	S/F	0957.8	0958.0	.6				
	6100	KISV	20	GRF	1035.0	1059	32.0	10			
	9500	POTS	20	GRF	1052.0	1107.5	56.0	7.6			
	9100	GORK	20	GRF	1053.0	1108.5	25.4	6.3	3		
	3000	POTS	20	GRF	1104.0	1107.7	11.0	8.6			
	1470	POTS	20	GRF	1104.0	1107.5	11.0	5.0			
	6100	KISV	29	PBI	1107.0	1107	53.0	4			
	930	BORD	46	C	1338.0	1338.5	1.5	41	3		
	228	HARS	45	C	1351.8	1351.8	1.2	180	65		
	430	KRAK	45	C	1353.0	1354.2U	2.5	630 D	410 U		
	810	KRAK	8	S	1353.3	1353.5	.2	9			
	3000	POTS	8	S	1358.0	1358.4	1.0	29			
	1470	POTS	8	S	1358.0	1358.6	1.0	71			
	2800	OTTA	3	S	1358.0	1358.3	1.0	52.0	13.0		
	7000	SAOP	1	S	1358.3	1358.3		9.0			30R
	2800	OTTA	21	GRF	1500.0	1538	110.0	3.4	1.7		
	7000	SAOP	45	C	1528.4	1529.0		13.0			27R
	2800	OTTA	8	S	1528.5	1529	.9	2.8	1.4		
	2800	OTTA	1	S	1535.0	1536.2	2.0	2.8	1.4		
	2800	OTTA	1	S	1541.0	1542	2.0	1.4	.7		
	9400	HUAN		S	1715.7	1717.3	23.1	9.8	5.5		R
	2800	OTTA	27A	RF	1958.0		94.0	3.4	2.7		
	2800	OTTA	24	R	1958.0	2020	22.0	3.4	1.7		
	2800	OTTA	4	S/F	1958.7	1959.2	4.5	34.4	8.6		
	2800	OTTA	24P	R	2020.0		55.0	3.4			
	2800	OTTA	26	FAL	2115.0	2132	17.0	-3.4	-1.7		
	3750	TYKW	20	GRF	2300.0	2320	80.0	3	1.5		
25	260	ONDR	44	NS	0732.0E		461.0D	138			
	3750	TYKW	45	C	0124.0	0124.9	15.0	3	.5		

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					UT	UT	MINUTES	PEAK	MEAN		
25	3750	TYKW	5	S	0148.0	0149.9	2.5	11	3		
	2000	TYKW	5	S	0149.0	0149.9	2.0	4.5	1		
	9400	TYKW	5	S	0149.8	0150	1.0	4	1.5		
	3750	TYKW	29	PBI	0150.5		40.0	1.5	.7		
	3750	TYKW	21	GRF	0400.0	0423	160.0	8	4		
	2000	TYKW	21	GRF	0400.0	0435	160.0	5.5	3		
	9400	TYKW	21	GRF	0410.0	0435	130.0	9	4		
	1000	TYKW	45	C	0413.8	0419.5	20.0	10	4.5		
	2000	TYKW	45	C	0414.0	0421	17.0	6	3.5		
	100	HIRA	46	C	0425.9	0426.4	4.5	310	83		WL
	9400	TYKW	45	C	0426.0	0428.6	3.5	9	4		
	3750	TYKW	45	C	0426.0	0428.6	10.0	15	3		
	200	HIRA	46	C	0426.0	0426.4	4.0	500	65		O
	500	HIRA	4	S/F	0427.5	0428.1	1.3	24	10		WL
	3750	TYKW	5	S	0449.0	0449.8	2.0	3.5	1		
	9100	GORK	20	GRF	0541.2	0547.3	42.0	11	6		
	3100	CRIM	24	R	0754.0	1226.0		6			
	33	UPIC	8	S	0918.0	0918.2	.7				
	29	UPIC	4	S/F	0918.0	0918.5	.8				
	234	POTS	4	S/F	1001.7	1001.8	.6	275	30		III
	234	POTS	4	S/F	1052.6	1052.9	.4	120	20		III
	2800	OTTA	1	S	1349.0	1353	6.0	2.6	1.9		
	9400	HUAN		S	1352.1	1400.8	33.3	4.2	3.0		O
	228	HARS	45	C	1448.8	1449.1	3.0	155	50		
	234	POTS	42	SER	1448.8	1449.5	2.6	550	10		III
	2800	OTTA	21	GRF	1530.0	1640	115.0	5.4			
	2800	OTTA	4	S/F	1716.5	1717.7	3.0	14.2	6.0		
	7000	SAOP	45	C	1717.0	1717.7	2.4	18.0			36R
	7000	SAOP	1	S	1736.6	1737.2		9.0			53R
	2800	OTTA	1	S	1737.0	1737.1	1.0	2.4	1.2		
	2800	OTTA	4	S/F	1924.0	1924.6	2.0	10.0	3.4		
	2800	OTTA	23	GRF	1945.0	2118	110.0	3.6	1.8		
	2800	OTTA	40	F	2045.0	2049.7	6.0	2.8			
	9400	HUAN		S	2049.6	2100.0	28.1	7.0	5.6		R
	2695	PENT	1	S	2200.5	2202	3.5	2.8	1.4		
	3750	TYKW	5	S	2201.5	2202.2	1.5	2.5	.8		
	3750	TYKW	20	GRF	2227.0	2250	70.0	2	1		
	2000	TYKW	45	C	2227.0	2228.3	3.0	30	8		
	2800	OTTA	1A	S	2227.0	2228.5	5.0	4.2	2.1		
	2800	OTTA	8	S	2228.1	2228.1	.1	22.0			
	2000	TYKW	29	PBI	2230.0		50.0	3	1.5		
	2000	TYKW	45	C	2359.0	2407.9U	14.0	59 D	11 D		
26	200	GORK	43	NS	0440.0		480.0		10		
	204	IZMI	43	NS	0600.0		360.0	60			
	200	HIRA	43	NS	0606.0	0800	160.0D	5	2		WL
	260	ONDR	44	NS	0728.0E		461.0D	108	6		
	127	TORN	43	NS	0857.0	1012.4	159.0	50	.5		V1
	200	HIRA	44	NS	2031.0E	0335	740.0D	20	5		WL
	2695	PENT	4	S/F	0001.5	0007.5	13.0	145.0	28.2		
	1400	SYDN	45	C	0001.6	0007.7	8.7				
	1415	MANI	4	S/F	0002.0	0005.9	12.0	21.8	7.3		
	4995	MANI	4	S/F	0002.0	0007.7	10.0	154.9	51.6		
	700	SYDN	27	RF	0002.8	0007.4	7.6				
	1000	TYKW	45	C	0003.0E	0007.4	8.0D	15 D	5 D		
	3750	TYKW	45	C	0003.0E	0007.3	10.0D	170	35 D		
	2930	VORO	45	C	0003.0	0008	12.0	206			
	606	MANI	4	S/F	0003.5	0007.7	7.0	34.4	11.5		
	200	HIRA			0004.0	0007.0		50			WL
	100	HIRA	7	C	0004.0	0004.2	6.0	700	40		O
	200	HIRA	46	C	0004.0	0004.7	5.6	110	25		WL
	100	HIRA			0004.0	0005.5		100			WL
	17000	NOBE	28	PRE	0004.8	0006.5	1.7	11			O
	8800	MANI	4	S/F	0005.0	0007.7	6.5	142.6	47.5		
	35000	NAGO	20	GRF	0006.0	0007	5.0	25			
	17000	NOBE	3	S	0006.5	0007.5	5.0	53			R
	9400	TYKW	5	S	0007.0E	0007.3	6.0D	110	35 D		
	2695	MANI	4	S/F	0007.0	0007.7	10.3	118.8	39.6		
	700	SYDN	8	S	0007.4	0007.6	.4				
	17000	NOBE	29	PBI	0011.4	0011.4	18.0	11			O
	3750	TYKW	29	PBI	0013.0		20.0	4	1.5		
	9400	TYKW	29	PBI	0013.0		20.0	7	3.5		
	2000	TYKW	29	PBI	0013.0		10.0	1.4	.7		
	1000	TYKW	5	S	0308.0	0309.2	3.0	2	.7		
	2000	TYKW	5	S	0309.0	0309.8	2.0	2	.7		
	100	GORK			0503.5	0516.6U		160 D			
	100	GORK			0503.5	0515.6U		160 D			
	100	GORK			0503.5	0518.0		220			
	100	GORK			0503.5	0514.0U		160 D			
	100	GORK	46	C	0503.5	0510.7	16.0	160			
	2000	TYKW	21	GRF	0510.0	0532	110.0	5.5	2		
	3750	TYKW	21	GRF	0510.0	0532	150.0	7	3		
	9400	TYKW	20	GRF	0510.0	0530	110.0	6	2.5		
	1000	TYKW	45	C	0517.0	0517.8	1.5	7	1.5		
	2000	TYKW	5	S	0517.0	0517.5	1.5	4	1		

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26	3750	TYKW	5	S	0517.0	0517.5	1.5	1	.3		
	200	GORK			0517.6	0519.0		40			
	200	GORK	46	C	0517.6	0517.9	2.5	40 D			
	650	GORK	2	S/F	0517.6	0518.2	1.4	5.4	3.0		
	950	GORK	1	S	0517.6	0518.2	1.0	6.0	3.0		
	2950	GORK	1	S	0518.0	0518.0	.6	2.0	1.0		
	100	GORK			0621.2	0625.5		140			
	100	GORK	46	C	0621.2	0624.7	6.5	180			
	650	GORK	22	GRF	0621.5	0623.3	5.9	7	3.6		
	950	GORK	1	S	0621.5	0623.3	4.2	5	2.5		
	1470	POTS	3	S	0821.5	0822.7	2.0	8.8			
	3000	POTS	1	S	0821.5	0822.7	2.5	5.0			
	950	GORK	1	S	0821.7	0822.6	2.0	6.0	3.0		
	2950	GORK	1	S	0822.2	0822.6	2.5	2.8	1.0		
	650	GORK	1	S	0822.3	0822.7	1.6	4	2		
	9100	GORK	22	GRF	1002.8	1015.3	15.0	12	3		
	100	GORK	8	S	1009.0	1009.2	.6	290			
	1470	POTS	22	GRF	1010.0	1016.5	13.0	2.0			
	9500	POTS	22	GRF	1011.0	1015.2	8.0	9.4			
	3000	POTS	22	GRF	1011.0	1015.3	9.0	3.0			
	33	UPIC	8	S	1011.3	1011.4	.7				
	29	UPIC	8	S	1011.3	1011.5	.6				
	6100	KISV	45	C	1013.0	1015.2	3.0	9			
	10400	BERN	41		1014.3	1015.3	4.0	8.0			ONLY PAPER REC
	8400	BERN	41		1014.3	1015.3	4.0	7.0			ONLY PAPER REC
	2950	GORK	1	S	1014.6	1016.3	3.0	2.4	1.2		
	9100	GORK	21	GRF	1039.0	1107.1	66.8	6	3		
	11800	BERN	20		1039.0	1039.8	6.0	10.0			ONLY PAPER REC
	8400	BERN	20		1039.0	1039.8	6.0	5.0			ONLY PAPER REC
	10400	BERN	20		1039.0	1039.8	6.0	8.0			ONLY PAPER REC
	15000	KISV	27	RF	1039.0	1039.5	11.0	6			
	6100	KISV	45	C	1039.0	1039.3	2.0	9			
	2950	GORK	1	S	1039.3	1039.7	1.4	2.8	1.4		
	100	GORK	2	S/F	1039.4	1039.7	1.0	140			
	9100	GORK	1	S	1039.4	1039.8	.9	9.5	4		
	950	GORK	1	S	1039.4	1040.0	1.0	1.8	.9		
	200	GORK	2	S/F	1039.5	1039.9	.9	35 D			
	650	GORK	1	S	1039.5	1040.0	.9	2			
	33	UPIC	3	S	1039.6	1039.8	.6				
	29	UPIC	3	S	1039.8	1040.0	.7U				
	3000	POTS	20	GRF	1102.0	1106	21.0	4.0			
	6100	KISV	45	C	1108.0	1109.7	5.0	7			
	7000	SAOP	3	S	1108.4	1110.0	7.0	16.0			23R
	15000	KISV	27	RF	1108.5	1110	5.0	4			
	11800	BERN	20		1109.1	1110.2	4.0	10.0			ONLY PAPER REC
	10400	BERN	20		1109.1	1110.2	4.0	8.0			ONLY PAPER REC
	8400	BERN	20		1109.1	1110.2	4.0	7.0			ONLY PAPER REC
	9100	GORK	1	S	1109.3	1110.1	2.0	8	4		
	9500	POTS	1	S	1109.4	1110.0	1.6	9.4			
	9400	HUAN		S	1212.6	1221.2	20.8	4.9	2.7		0
	9400	HUAN		S	1227.6	1228.8	1.6	9.8	4.9		0
	9400	HUAN		S	1237.8	1243.5	27.0	11.4	2.1		0
	9400	HUAN		S	1239.6	1240.3	1.3	13.0	6.2		0
	9400	HUAN		C	1327.9	1330.3	4.3	86.4	34.5		R
	10715	DWIN	45	C	1328.0	1330	4.0	35	20		
	7000	SAOP	45	C	1328.0	1330.3	3.0	54.0			10R
	2650	DWIN	1	S	1328.0	1330	5.0	15	5		
	9500	POTS	4	S/F	1328.0	1330.0	3.5	74			
	2800	OTTA	46F	C	1328.2	1330.7	6.0	14.8	3.5		
	8400	BERN	46		1328.2	1330.2	4.0	36.0			ONLY PAPER REC
	1470	POTS	28	PRE	1328.2	1330.8	12.0	15			
	19600	BERN	46		1328.2	1330.2	3.0	106.0			ONLY PAPER REC
	35000	BERN	20		1328.2	1330.2	1.0	71.0			ONLY PAPER REC
	3000	POTS	28	PRE	1328.2	1330.9	9.3	18			
	11800	BERN	46		1328.2	1330.2	6.0	94.0			ONLY PAPER REC
	10400	BERN	46		1328.2	1330.2	4.0	74.0			ONLY PAPER REC
	228	HARS	45	C	1329.0	1330.0	2.1	160	60		
	536	ONDR	42	SER	1329.0	1421	52.0	68			
	234	POTS	42	SER	1329.8	1330.3	5.5	265	3		III
	113	POTS	42	SER	1330.1	1330.2	5.3	500	6		III
	113	POTS	42	SER	1417.4	1420.9	15.0	175	1 E		III
	2800	OTTA	2	S/F	1419.5	1421	4.5	6.0	2.4		
	1470	POTS	3	S	1420.0	1421.3	5.0	10			
	234	POTS	4	S/F	1420.4	1420.8	1.1	340	40		III
	930	BORD	41	F	1420.4	1420.5	.3	25	2		
	3000	POTS	3	S	1420.8	1421.4	2.2	7.0			
	2800	OTTA	240	R	1740.0	1800	20.0	3.6	2.6		
	9400	HUAN		S	1934.6	2005.0	50.1	9.8	4.6		R
	3750	TYKW	5	S	2203.0	2205.3	7.0	2.5	.5		
	2800	OTTA	1	S	2204.0	2205	3.0	2.8	1.4		
	2000	TYKW	5	S	2205.0	2205.3	1.0	3	1		
	1000	TYKW	5	S	2205.0	2205.5	1.0	3	1		
	100	HIRA	42	SER	2254.6	2339.7	50.0	4800			
	2000	TYKW	42	SER	2255.0	2256.7	5.0	13	1		
	1000	TYKW	45	C	2255.0	2256.8	4.0	6	1		

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DAY OF MONTH	FREQUENCY	STATION	TYPE		STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} MEAN	INT	POLARIZATION OR REMARKS
26	3750	TYKW	45	C	2255.0	2307	35.0	5	1.5		
	2695	PENT	40	F	2255.5	2256.7	5.0	6.4			
	2000	TYKW	45	C	2306.0	2307.0	2.0	3	.5U		
	2695	PENT	1	S	2306.5	2307	1.0	3.2	1.6		
	2695	PENT	1	S	2308.5	2309	1.0	2.6	1.3		
	2695	PENT	8	S	2320.2	2320.3	.2	3.2			
	2000	TYKW	8	S	2320.3	2320.3	.1	5	2.5U		
	2000	TYKW	45	C	2338.0	2340.0	3.0	14	2		
	3750	TYKW	45	C	2338.0	2338.9	22.0	4	1		
	2695	PENT	1	S	2338.5	2339	2.0	3.2	1.6		
27	200	GORK	44	NS	0446.0E		542.0D		10		
	204	IZMI	43	NS	0600.0		360.0	40			
	33	UPIC	43	NS	0627.3	1008.3	444.7				
	29	UPIC	43	NS	0627.3	1008.5	444.6				
	260	ONDR	44	NS	0702.0E		483.0D	155	19		
	127	TORN	43	NS	0720.0	1043.2	450.0	130	20		V1
	100	GORK	43	NS	0806.0		354.0E		5		
	200	HIRA	44	NS	2030.0E	2226	450.0D	15	8		ML
	1000	TYKW	45	C	0210.0	0212.7	5.0	3	.5		
	3750	TYKW	5	S	0212.0	0212.6	1.0	1	.3U		
	2000	TYKW	5	S	0212.0	0212.6	2.0	3	1		
	2000	TYKW	21	GRF	0355.0	0450	210.0	3.5	2		
	3750	TYKW	21	GRF	0400.0	0450	200.0	5	3		
	3750	TYKW	5	S	0403.0	0404.4	3.0	2	.5		
	9400	TYKW	5	S	0404.0	0404.5	1.5	6	1.5		
	9400	TYKW	5	S	0415.0	0425	25.0	3	1		
	1000	TYKW	42	SER	0418.5	0419.7	3.5	3.5	.7		
	2000	TYKW	42	SER	0418.9	0419.7	2.0	1.5	.5		
	2000	TYKW	5	S	0424.0	0424.9	3.0	3	1		
	1000	TYKW	5	S	0424.5	0424.9	1.0	15	5		
	3750	TYKW	45	C	0429.0	0434.7	9.0	3	1		
	113	POTS	42	SER	0712.2	0721.9	19.0	300	1 E		III
	100	GORK			0712.5	0722 U		420 D			
	100	GORK	41	F	0712.5	0712.6	17.5	420 D			
	100	GORK			0712.5	0726.0		380			
	100	GORK			0712.5	0729.4		330			
	1000	TYKW	45	C	0713.0	0714.6	3.0	2	1		
	1470	POTS	8	S	0714.4	0714.5	.6	21			
	650	GORK	2	S/F	0721.1	0721.4	.8	3.5			
	1000	TYKW	45	C	0729.5	0731.0	2.0	6	1		
	1000	TYKW	5	S	0740.5	0741.4	1.5	4	1		
	3000	POTS	3	S	0740.5	0741.3	1.1	9.0			
	1470	POTS	3	S	0740.5	0741.4	1.5	8.3			
	2000	TYKW	5	S	0740.6	0741.3	1.0	7	2.5		
	3750	TYKW	5	S	0741.0	0741.3	.5	2.5	1		
	650	GORK	2	S/F	0741.2	0741.2	.7	4.5			
	650	GORK	4	S/F	0847.5	0851.4	5.8	19			
	536	ONDR	45	C	0848.0	0849.2	4.0	65	15		
	113	POTS	4	S/F	0848.7	0848.8	.3	500	125		III
	430	KRAK	8	S	0848.7	0848.7	.5	25			
	100	GORK	8	S	0848.9	0849.0U	.6	420 D			
	100	GORK	4	S/F	0926.8	0927.0	1.6	240			
	536	ONDR	8	S	0949.0	0949	.2	13			
	6100	KISV	46	C	0950.0	0951.5	5.0	9			
	9500	POTS	1	S	0950.5	0951.4	1.9	6.2			
	9100	GORK	1	S	0950.6	0951.7	4.0	11	5		
	204	IZMI	4	S/F	1007.5	1008.3	1.5	140	50		
	127	TORN	47	GB	1007.6	1008.6	1.8	750	380		
	100	GORK	46	C	1007.7	1008.0	2.0	400			
	100	GORK			1007.7	1008.5U		400 D			
	200	GORK	4	S/F	1007.8	1008.5	1.6	40 D			
	113	POTS	4	S/F	1007.9	1008.4	1.2	850	70		III
	650	GORK	41	F	1019.5	1022.3	7.9	4.0			
	650	GORK			1019.5	1023.4		6.0			
	113	POTS	42	SER	1021.0	1043.0	12.0	350	1 E		III
	10400	BERN	3		1021.5	1022.8	3.5	14.0			ONLY PAPER REC
	8400	BERN	3		1021.5	1022.8	3.5	16.0			ONLY PAPER REC
	3000	POTS	1	S	1022.0	1022.8	2.0	5.0			
	9500	POTS	3	S	1022.4	1022.7	1.6	17			
	9100	GORK	1	S	1022.5	1023.1	1.5	20	10		
	2950	GORK	1	S	1022.8	1023.0	1.1	1.5			
	204	IZMI	41	F	1028.5	1029.5	1.5	270			
	100	GORK	8	S	1032.3	1032.3	.5	400			
	100	GORK	8	S	1043.1	1043.3	.5	400 D			
	650	GORK	1	S	1100.5	1104.3	5.8	1.5			
	536	ONDR	42	SER	1104.0	1134	45.0	72			
	9100	GORK	21	GRF	1106.0		174.0E				
	430	KRAK	1	S	1118.2	1118.5	.3	5			
	810	KRAK	8	S	1119.0	1119.0	.1	6			
	6100	KISV	4	S/F	1122.0	1123	3.0	18			
	3100	CRIM	28	PRE	1132.0	1154.0	44.0	9	3		
	228	HARS	45	C	1133.2	1133.8	1.2	165	60		
	200	GORK	2	S/F	1133.8	1134.1	1.2	30 D			
	650	GORK			1133.8	1136.9		2.3			

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DAY OF MONTH	FREQUENCY	STATION	TYPE		STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	POLARIZATION OR REMARKS
					UT	UT	MINUTES	PEAK	MEAN		
27	650	GORK	41	F	1133.8	1134.4	6.7	4.2			
	430	KRAK	45	C	1133.8	1134.0	3.0	90	16		
	234	POTS	4	S/F	1133.9	1134.1	.5	820	140		III
	810	KRAK	8	S	1134.0	1134.0	.1	10			
	810	KRAK	8	S	1136.0	1136.0	.1	8			
	1470	POTS	45	C	1138.0	1303.5	170.0	330			
	930	BORD	8	S	1142.7	1142.7	.1	21	1		
	3000	POTS	45	C	1143.0	1259.5	164.0	1600 E			
	650	GORK	1	S	1146.8	1147.9	5.8	1.5			
	200	GORK	46	C	1207.6	1232.1	113.4E	520			
	200	GORK			1207.6	1331.4		90			
	200	GORK			1207.6	1327.4		130			
	2800	OTTA	47	GB	1210.0	1259.5	90.0	733.0	137.0		
	950	GORK	46	C	1212.5	1252.7	107.0E	87			
	950	GORK			1212.5	1327.0		80			
	950	GORK			1212.5	1303.0		160			
	950	GORK			1212.5	1317.6		104			
	2950	GORK			1212.9	1253.7		190			
	2950	GORK	47	GB	1212.9	1237.0	108.0E	70			
	2950	GORK			1212.9	1259.6		580			
	19600	BERN	20		1215.0	1259.7	18.0	82.0			ONLY PAPER REC
	8400	BERN	47		1215.0	1259.7	18.0	260.0D			ONLY PAPER REC
	10400	BERN	47		1215.0	1259.7	18.0	500.0			ONLY PAPER REC
	11800	BERN	47		1215.0	1259.7	18.0	430.0			ONLY PAPER REC
	113	POTS	27	RF	1216.0	1238	114.0	56			RISE+I
	3100	CRIM	47	GB	1216.0	1310.5	78.0	432	144		
	650	GORK			1218.8	1306.4		260			
	650	GORK			1218.8	1326.6		100			
	650	GORK			1218.8	1318.3		130			
	650	GORK	46	C	1218.8	1303.0	102.0E	227			
	6100	KISV	47	GB	1219.0	1259.7		560			
	6100	KISV			1219.0	1247		130			
	6100	KISV			1219.0	1253.5		200			
	9500	POTS	45	C	1220.0	1259.8	125.0	520			
	536	ONDR			1220.0	1346.5		75			
	2650	DWIN	49	GB	1220.0		95.0	580 D			
	10715	DWIN	49	GB	1220.0	1259	80.0	220	100		
	536	ONDR	48	C	1220.0	1306.3	100.0	136	14		
	430	KRAK	46	C	1220.8	1230.0U	99.0D	160	15		
	100	GORK	46	C	1221.8	1226.4	36.0	1000			
	100	GORK			1221.8	1237.9		840			
	9400	HUAN		PRE	1223.2	1242.0	18.8	29.2	14.7		0
	113	POTS	4	S/F	1226.2	1226.3	.4	400	100		III
	127	TORN	27	RF	1226.9	1232.7	47.0	140	130		
	808	ONDR	48	C	1230.0	1305.2	80.0	121	58		
	930	BORD	45	C	1234.0	1303	88.0	165	40		
	9100	GORK			1234.8	1253.4		135			
	9100	GORK			1234.8	1259.7		690			
	9100	GORK	46	C	1234.8	1246.7	53.0	65			
	9100	GORK			1234.8	1301.6		575			
	810	KRAK			1235.5U	1326.5		90			
	810	KRAK			1235.5U	1318.0		150			
	810	KRAK	48	C	1235.5U	1305.0	58.0U	250	50		
	9400	HUAN		C	1242.0	1259.5	42.1	798.9	243.7		R
	33	UPIC	48	C	1246.4	1248.9	24.5				
	29	UPIC	48	C	1246.6	1248.7	25.0				
	600	UCCL	40	F	1251.0	1305.5	67.0				
	9400	HUAN		PBI	1324.1	1324.1	121.4	34.4	17.3		R
	810	KRAK	42	SER	1333.5	1344.0	24.5	20			
	810	KRAK			1333.5	1350.0		25			
	2800	OTTA	30	PBI	1340.0	1340	610.0	32.4	11.0		
	930	BORD	41	F	1513.0	1516.4	4.0	30	3		
	2800	OTTA	21	GRF	1830.0	1844	50.0	7.0	2.4		
	2800	OTTA	4	S/F	1837.0	1840	6.5	275.0	59.0		
	9400	HUAN		C	1837.1	1840.8	6.4	328.1	135.1		R
	7000	SAOP	45	C	1837.6	1840.8	17.6	460.0			3R
	9400	HUAN		PBI	1843.5	1843.5	44.7	36.1	12.6		R
	2800	OTTA	45	C	2030.2	2030.7	2.0	26.8	8.9		
	2800	OTTA	45	C	2108.0	2108.7	2.5	5.6	2.8		
	2800	OTTA	29	PBI	2110.5	2110.5	8.0	2.2	1.1		
	1000	TYKW	45	C	2149.2	2149.4	.4	14	3		
28	200	GORK	44	NS	0444.0E		420.0D		5		
	100	GORK	43	NS	0615.0		72.0		5		
	260	ONDR	44	NS	0650.0E		492.0D	67			
	33	UPIC	43	NS	0829.6	0830.0	287.4				
	29	UPIC	43	NS	0829.6	0934.2	287.1				
	100	HIRA	41	F	0156.4	0158.3	4.0	1700			WL
	2000	TYKW	5	S	0202.0U	0204	5.0U	3	1 U		
	200	HIRA	46	C	0202.2	0203.0	2.4	230	115		MR
	100	HIRA	46	C	0202.5	0203.0	3.0	1400	190		0
	100	HIRA	48	C	0340.0	0340.4	2.7	25000	5900		0
	3750	TYKW	45	C	0340.0	0341.0	2.5	7	2.5		
	2000	TYKW	5	S	0340.0	0340.7	2.5	5	1.5		
	1000	TYKW	5	S	0340.0	0340.8	2.5	3	1		

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DAY OF MONTH	FREQUENCY	STATION	TYPE		STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	POLARIZATION OR REMARKS
28	200	HIRA	46	C	0340.0	0341.0	1.9	1300	260		WL
	9400	TYKW	5	S	0340.5	0341.2	2.0	3	1		
	700	SYDN	8	S	0414.9	0415.3	.6				
	700	SYDN	4	S/F	0417.7	0418.3	1.1				
	650	GORK	41	F	0515.5	0518.1	9.0	13			
	650	GORK			0515.5	0522.7		14			
	100	GORK			0516.5	0522.7		280 D			
	100	GORK	41	F	0516.5	0517.0U	7.5	280 D			
	100	HIRA	42	SER	0516.6	0517.7	9.0	2200			WL
	700	SYDN	3	S	0522.4	0522.8	.8				
	9400	TYKW	20	GRF	0635.0	0700	85.0D	6	5 D		
	2000	TYKW	21	GRF	0635.0	0710	85.0D	8	5.5D		
	3750	TYKW	21	GRF	0636.0	0700	84.0D	7	5.5D		
	9100	GORK	23	GRF	0636.0	0806 U	390.0	9			
	650	GORK	20	GRF	0636.7	0637.6	8.3	6.0	3.0		
	1000	TYKW	45	C	0637.0	0638.7	2.0	7	1.5		
	2000	TYKW	45	C	0637.0	0637.7	2.5	3	1		
	100	HIRA	42	SER	0642.0	0829.7	120.0	16000			O
	100	GORK			0730.6	0740.0		430			
	100	GORK			0730.6	0734.8		430			
	100	GORK	41	F	0730.6	0731.8	9.6	430 D			
	2950	GORK	21	GRF	0756.7E	0800 U	270.0E	10			
	1470	POTS	1	S	0803.5	0804.5	3.0	5.3			
	2950	GORK	1	S	0803.8	0804.1	2.0	4.2	2.0		
	3000	POTS	1	S	0804.0	0804.5	1.5	4.9			
	113	POTS	42	SER	0827.8	0829.9	5.8	1300	10		III
	10715	DWIN	4	S/F	0854.0	0856	4.0	75	50		
	2650	DWIN	4	S/F	0854.0	0856	6.0	195	100		
	3100	CRIM	3	S	0855.0	0858.0	7.0	46	15		
	430	KRAK	48	C	0925.2	0928.0U	5.0	450 D	180		
	430	KRAK	2	S/F	0938.5	0939.0	1.5	35	12		
	930	BORD	41	F	0947.6	0948	1.6	13	2		
	1470	POTS	1	S	0948.0	0948.9	2.0	5.3			
	808	ONDR	45	C	0951.0	0956.4	19.0	52	12		
	650	GORK			0953.1	0956.5		85			
	650	GORK	45	C	0953.1	0954.3U	6.9	60			
	127	TORN	47	GB	0953.3	0958.9	10.0	740	370		SATURATED
	536	ONDR	46	C	0953.7	0954.3	6.0	169	42		
	950	GORK	5	S	0954.0	0956.6	15.0	54			
	930	BORD	45	C	0954.0	0956.5	7.0	59	12		
	6100	KISV	4	S/F	0954.0	0956.5	4.0	220			
	3000	POTS	4	S/F	0954.0	0956.5	8.5	185			
	11800	BERN	46		0954.1	0957.0	7.0	186.0			ONLY PAPER REC
	8400	BERN	46		0954.1	0956.5	7.0	190.0			ONLY PAPER REC
	10400	BERN	46		0954.1	0956.5	7.0	167.0			ONLY PAPER REC
	9100	GORK	46	C	0954.3	0956.0	5.6	220			
	2950	GORK	4	S/F	0954.3	0956.6	5.7	190			
	9100	GORK	46	C	0954.3	0956.5		290			
	200	GORK			0954.4	0958.3		6400			
	200	GORK			0954.4	1000.8		2200			
	200	GORK	46	C	0954.4	0956.6	8.2	580 D			
	600	UCCL	4	S/F	0954.5	0955	5.5	210	40		
	1470	POTS	3	S	0954.5	0957.0	14.0	100			
	430	KRAK	46	C	0954.5	0955.0	11.7	320	30		
	9500	POTS	4	S/F	0954.5	0956.0	9.0	205			
	810	KRAK	2	S/F	0955.0	0955.8	3.0	55	20		
	260	ONDR	46	C	0955.0		6.0	219 D	80		
	228	HARS	45	C	0955.4	0958.6	6.2	800 U	260 U		
	204	IZMI	46	C	0955.5	1000.0	7.5	10700	4000		
	113	POTS	49	GB	0955.6	0957.7	30.0	8000			III
	234	POTS	48	C	0955.6	0958.4	6.9	6200			III
	100	GORK	46	C	0955.6	0956.0U	152.0	560 D			
	100	GORK			0955.6	0957.0		9600			
	100	GORK			0955.6	1009.8		7300 D			
	35000	BERN	20		0956.0	0957.0	3.0	80.0U			ONLY PAPER REC
	19600	BERN	20		0956.0	0957.0	3.0	103.0			ONLY PAPER REC
	430	KRAK	48	C	1110.3	1121.5U	13.0	440	90 U		
	237	TRST	41	F	1216.1	1216.2	1.1	140			3L
	100	GORK			1216.1	1217		540			
	100	GORK	41	F	1216.1	1216.3U	1.4	540 D			
	113	POTS	42	SER	1216.2	1217.0	7.5	600	1		III
	9400	HUAN		S	1244.8	1306.5	58.0	5.1	1.9		O
	2800	OTTA	20	GRF	1455.0	1511	65.0	3.6	1.2		
	237	TRST	41	F	1524.3	1525.6	1.5	47			6R
	2800	OTTA	21	GRF	2000.0	2017	100.0	12.4	6.2		
	2800	OTTA	4	S/F	2001.5	2005	6.0	32.2	16.1		
	9400	HUAN		S	2052.2	2102.5	31.1	7.0	5.6		O
	2800	OTTA	4	S/F	2053.0	2054	3.0	31.2	15.6		
	1000	TYKW	45	C	2059.0E	2059.8	2.0D	32 D	3 U		
	1000	TYKW	45	C	2109.0E	2110.1	1.2D	12	2 U		
	3750	TYKW	5	S	2154.0	2154.7	1.0	3	1		
	2000	TYKW	5	S	2154.0	2154.7	1.0	5	2		
	1000	TYKW	45	C	2154.0	2154.7	1.0	50	5		
	2800	OTTA	4	S/F	2157.0	2159.5	4.0	155.2	26.0		
	500	HIRA	48	C	2157.4	2201.2	21.0	6000	500		SL

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28	9400	HUAN			2157.8	2200.6		115.1			R
	9400	HUAN			2157.8	2159.0		167.4			R
	9400	HUAN		C	2157.8	2158.2	4.4	238.9	89.1		R
	2000	TYKW	45	C	2158.0	2159.5	4.0	245	40		
	9400	TYKW	45	C	2158.0	2158.5	3.0	240	60		
	17000	NOBE	45	C	2158.0	2158.4	.9	190			R
	3750	TYKW	45	C	2158.0	2159.4	3.0	93	25		
	1000	TYKW	47	GB	2158.0	2159.5	5.0	1080	200		
	17000	NOBE	45	C	2158.9	2159.1	1.5	203			R
	606	MANI	4	S/F	2200.0	2204.7	11.3	125.6	41.8		
	17000	NOBE	7	C	2200.4	2200.6	.7	59			R
	9400	TYKW	29	PBI	2201.0		15.0	12	6		
	3750	TYKW	29	PBI	2201.0		15.0	5	2.5		
	2800	OTTA	29	PBI	2201.0	2201	14.0	4.4	2.2		
	17000	NOBE	29	PBI	2201.1	2204.4	15.0	22			0
	2000	TYKW	29	PBI	2202.0		9.0	8	4		
	9400	HUAN		PBI	2202.2	2202.2	15.3	10.5	6.3		0
	1000	TYKW	29	PBI	2203.0		5.0	10	5		
	606	MANI	8	S	2325.9	2326.6	1.1	203.0	67.6		
	1000	TYKW	45	C	2326.0	2326.3	.5	11 D	2 D		
	2695	PENT	3	S	2443.0	2444	2.0	25.2	12.6		
29	33	UPIC	43	NS	0555.4	0854.8	537.2				
	29	UPIC	43	NS	0555.5	0858.7	537.5				
	260	ONDR	44	NS	0715.0E		499.0D	205	4		
	536	ONDR	43	NS	0734.0		436.0	396 D	5		
	1000	TYKW	45	C	0019.3	0020.2	1.0	9 D	1 D		
	2930	VORO	45	C	0040.0	0045	10.0	18			
	1000	TYKW	45	C	0042.0	0044.4	7.0	14	3		
	2000	TYKW	5	S	0042.0	0044.3	7.0	30	5		
	3750	TYKW	45	C	0042.0	0043.9	7.0	20	3.5		
	9400	TYKW	45	C	0042.0	0044.2	7.0	53	5		
	500	HIRA	46	C	0042.8	0042.9	1.6	300	50		0
	17000	NOBE	7	C	0043.0	0044.3	2.4	38			0
	3750	TYKW	21	GRF	0100.0	0129	140.0	8	4		
	9400	TYKW	20	GRF	0105.0	0130	110.0	9	4		
	2000	TYKW	21	GRF	0105.0	0130	130.0	4	2		
	1000	TYKW	21	GRF	0105.0	0140	100.0	2.5	1		
	1000	TYKW	8	S	0105.7	0105.7	.1	3	1 U		
	1000	TYKW	45	C	0110.0	0112.0	7.0	2	.5		
	17000	NOBE	20	GRF	0111.0	0137.3	72.0	10			0
	1000	TYKW	8	S	0139.0	0139.1	.3	4	1		
	1000	TYKW	8	S	0203.3	0203.3U	.3	5 D	1 D		
	1000	TYKW	8	S	0205.3	0205.3	.1	6	3 U		
	2000	TYKW	45	C	0244.0	0244.4	6.0	2	.5		
	1000	TYKW	45	C	0244.2	0244.3	1.0	4	1		
	606	MANI	4	S/F	0244.5	0245.2	1.5	88.0	29.3		
	1000	TYKW	5	S	0303.0	0303.5	1.5	3	1		
	1000	TYKW	45	C	0319.0	0320.3	2.0	8	1.5		
	2000	TYKW	45	C	0319.5	0320.3	1.5	18	3		
	500	HIRA	46	C	0328.8	0331.3	6.5	500	100		SL
	9400	TYKW	45	C	0329.0	0329.5	5.0	16	2		
	2000	TYKW	42	SER	0329.0	0329.4	5.0	4.5	.5		
	1000	TYKW	42	SER	0329.0	0330.6	5.0	55	5		
	3750	TYKW	45	C	0329.0	0329.5	5.0	4	.5		
	100	HIRA	42	SER	0329.1	0329.5	6.0	28000			WL
	17000	NOBE	1	S	0329.3	0329.5	.4	14			0
	1415	MANI	2	S/F	0329.3	0330.8	5.2	6.4	2.1		
	606	MANI	4	S/F	0329.3	0331.8	6.4	238.9	79.6		
	3750	TYKW	5	S	0341.5	0342.2	1.5	1	.3		
	1000	TYKW	5	S	0351.3	0351.5	.4	5	1		
	1000	TYKW	42	SER	0401.5	0417.3	23.5	7	.5		
	1000	TYKW	45	C	0427.0	0427.8	3.0	120	10		
	2000	TYKW	45	C	0427.0	0428.7	2.0	43	3		
	1415	MANI	4	S/F	0428.2	0429.6	3.6	41.6	13.9		
	606	MANI	4	S/F	0428.3	0430.5	3.8	174.2	58.1		
	1000	TYKW	42	SER	0435.5	0447.8	14.0	260	10		
	650	GORK	46	C	0436.0E	0437.4	17.5D	16			
	650	GORK			0436.0E	0440.9		21			
	650	GORK			0436.0E	0448.0		560			
	650	GORK			0436.0E	0443.5		23			
	606	MANI	4	S/F	0436.3	0448.2	14.1	313.5	104.5		
	100	GORK	8	S	0437.0	0437.5	1.0	1000 D			
	950	GORK	46	C	0437.0E	0440.9	13.0D	48			
	2000	TYKW	42	SER	0437.0	0441.2	12.0	70	3		
	950	GORK			0437.0E	0448.0		270			
	1415	MANI	4	S/F	0437.3	0441.9	12.7	76.8	25.8		
	200	GORK	46	C	0439.0E	0449.1	18.0D	630			
	200	GORK			0439.0E	0450.0		1500			
	100	GORK	46	C	0444.8	0445.0	5.0	80			
	100	GORK			0444.8	0447.0		80 D			
	100	GORK			0444.8	0448.7		80 D			
	3750	TYKW	5	S	0446.7	0447.0	.4	4	1		
	1000	TYKW	8	S	0501.4	0501.5	.3	3	1		
	1415	MANI	47	GB	0506.0	0512.2	24.0	1706.6	568.9		

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29	200	HIRA	45 C	0508.0	0515.6	13.0	300	80		ML
	200	GORK	46 C	0509.0	0513.0	11.3	130 D			
	200	GORK		0509.0	0515.7		580			
	500	HIRA	48 C	0509.3	0512.3	20.0	6500	500		SL
	950	GORK	46 C	0510.5	0512.3	7.0	1750			
	950	GORK		0510.5	0512.9		1250			
	1000	TYKW	47 GB	0510.5	0512.3	7.0	2000	200		
	650	GORK	46 C	0510.8	0513.0	21.2	1200			
	650	GORK		0510.8	0515.5		630			
	2000	TYKW	47 GB	0511.0	0511.9	7.0	540	60		
	3750	TYKW	45 C	0511.0	0512.7	10.0	8	3		
	606	MANI	47 GB	0511.2	0513.0	18.8	5524.1	1841.3		
	100	GORK		0511.5	0515.4		100			
	100	GORK	41 F	0511.5	0512.6	4.3	100			
	2950	GORK	4 S/F	0511.5	0511.6	5.8	50			
	9100	GORK	22 GRF	0511.8	0604.0	58.0	13.5	3.5		
	2695	MANI	4 S/F	0511.8	0515.0	4.7	50.4	16.8		
	9400	TYKW	5 S	0512.0	0516	15.0	4	2		
	950	GORK	2 S/F	0527.9	0528.8	3.0	21			
	1000	TYKW	45 C	0528.0	0529.0	3.0	9	2.5		
	200	GORK	4 S/F	0528.0	0528.9	1.8	45 D			
	2000	TYKW	5 S	0528.4	0529.0	1.5	4	1.5		
	100	HIRA	46 C	0528.5	0529.0	1.2	5000	1100		WL
	3750	TYKW	45 C	0528.5	0529.0	1.5	3	1		
	100	GORK	8 S	0528.6	0529.0U	1.0	850 D			
	200	HIRA	46 C	0529.4	0529.5	.9	900	190		WL
	200	GORK	41 F	0551.9	0555.6	12.6	45			
	200	GORK		0551.9	0604.2		180 D			
	1415	MANI	4 S/F	0553.7	0556.1	7.6	6.4	2.1		
	6100	KISV	45 C	0555.0	0556	13.0	6			
	6100	KISV		0555.0	0604.3		3			
	6100	KISV		0555.0	0558.5		5			
	3750	TYKW	45 C	0555.0	0558.3	15.0	6	1 D		
	2000	TYKW	45 C	0555.0	0555.3	6.0	11	1.5		
	9400	TYKW	5 S	0555.0	0558.5	15.0	4	2 D		
	100	GORK		0555.0	0604.5		520			
	950	GORK	2 S/F	0555.0	0555.5	5.6	20			
	100	GORK	41 F	0555.0	0555.5U	10.0	370 D			
	1000	TYKW	45 C	0555.0	0556.8	6.0	14	2		
	200	HIRA	46 C	0555.1	0555.7	1.0	42	19		WL
	100	HIRA	46 C	0555.2	0555.8	1.0	7000	1600		ML
	500	HIRA	46 C	0555.4	0559.2	6.0	160	40		SL
	650	GORK	2 S/F	0555.4	0559.0	4.8	5			
	606	MANI	4 S/F	0555.7	0559.7	5.5	70.4	23.4		
	600	UCCL	4 S/F	0556.0	0559	4.0	35	15		
	10715	DWIN	4 S/F	0635.0	0636	3.0	40	20		
	1000	TYKW	5 S	0651.0	0651.3	1.0	8	.8		
	100	GORK	41 F	0707.2	0707.3	8.3	85			
	100	GORK		0707.2	0710.7		250			
	100	GORK		0707.2	0714.2		205			
	200	GORK	41 F	0710.0	0714.2	8.0	120			
	200	GORK		0710.0	0717.6		140			
	2000	TYKW	42 SER	0711.0	0714.8	4.0	6	.5		
	1000	TYKW	42 SER	0711.0	0714.0	4.0	9	.5		
	650	GORK	4 S/F	0713.5	0714.2	2.5	38			
	600	UCCL	4 S/F	0714.0	0714.5	1.0	33	10		
	200	GORK		0729.3	0739.0		175			
	200	GORK		0729.3	0748.7		260			
	200	GORK	41 F	0729.3	0736.8	20.5	180			
	100	GORK		0730.8	0734.3		160			
	100	GORK	41 F	0730.8	0730.9	8.3	120			
	650	GORK	41 F	0733.5	0736.0U	15.8	80			
	650	GORK		0733.5	0748.3		67			
	9100	GORK		0735.2	0736.8		70			
	9100	GORK	46 C	0735.2	0736.4	7.8	110			
	950	GORK	41 F	0735.5	0736.1	21.7	17			
	600	UCCL	4 S/F	0735.5	0736	2.0	60	20		
	1000	TYKW	5 S	0735.5	0736.4	2.5	11	5		
	950	GORK		0735.5	0755.7		3.5			
	237	TRST	41 F	0735.5	0738.1	3.1	170			2L
	950	GORK		0735.5	0745.2		70			
	9400	TYKW	45 C	0735.5	0736.4	3.0	110	25		
	3750	TYKW	5 S	0735.5	0736.3	3.0	11	3		
	6100	KISV	4 S/F	0735.5	0736.5	5.0	50			
	19600	BERN	4	0735.5	0736.4	2.0	26.0			ONLY PAPER REC
	8400	BERN	4	0735.5	0736.4	4.0	72.0			ONLY PAPER REC
	3000	POTS	3 S	0735.5	0736.4	1.6	6.8			
	11800	BERN	4	0735.5	0736.4	3.0	84.0			ONLY PAPER REC
	9500	POTS	4 S/F	0735.5	0736.3	3.0	86			
	10400	BERN	4	0735.5	0736.4	4.0	112.0			ONLY PAPER REC
	500	HIRA	46 C	0735.7	0736.0	1.5	60	25		ML
	2950	GORK	1 S	0735.8	0736.3	2.7	6.6	3.0		
	2000	TYKW	5 S	0736.0	0736.4	2.0	12	3.5		
	100	HIRA	46 C	0736.0	0736.3	1.6	800	200		WL
	200	HIRA	45 C	0736.0	0736.9	1.3	170	44		O

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29	17000	NOBE	2	S/F	0736.0	0736.3	2.0	49			R
	1470	POTS	3	S	0736.0	0736.7	3.5	10			
	3100	CRIM	1	S	0736.0	0737.0	2.0	15	5		
	606	MANI	4	S/F	0736.0	0736.7	3.8	123.2	41.0		
	234	POTS	42	SER	0736.1	0746.6	14.0	1100	2		III
	113	POTS	41	F	0736.1	0736.2	4.0	350	15		III
	327	TRST	41	F	0736.1	0736.3	2.2	94			0
	100	GORK	46	C	0736.8		1750.0				
	100	GORK			0739.0		1600.0				
	1000	TYKW	8	S	0740.5	0740.6	.2	34	5		
	430	KRAK	4	S/F	0742.3	0746.0	8.8	280	20		
	1470	POTS	4	S/F	0744.5	0745.7	3.5	25			
	327	TRST	41	F	0744.7	0745.5	5.3	900			33L,VAR POL
	505	TRST	45	C	0745.0	0747.4	5.0				
	600	UCCL	4	S/F	0745.0	0745.3	4.0	180	55		
	810	KRAK			0745.0	0747.5		80			
	810	KRAK	46	C	0745.0	0745.5	2.5	480	110		
	1000	TYKW	45	C	0745.0	0745.4	2.5	115	12		
	606	MANI	4	S/F	0745.0	0745.9	4.8	220.0	73.3		
	2000	TYKW	45	C	0745.3	0745.8	1.5	23	7		
	408	TRST	42	SER	0745.3	0745.5	6.5	470			24L,VAR POL
	237	TRST	41	F	0745.4	0745.6	4.6	650			28L,VAR POL
	204	IZMI	5	S	0746.8	0748.5	3.2	150	100		
	3100	CRIM	1	S	0754.5	0756.0	4.0	11	3		
	1000	TYKW	5	S	0754.5	0755.7	2.5U	4 U	1 U		
	2950	GORK	1	S	0755.0	0755.8	2.5	2.8	1.4		
	2000	TYKW	5	S	0755.0	0755.7	4.0	5.5	2		
	3750	TYKW	5	S	0755.0	0756	3.0	2	1		
	3000	POTS	1	S	0755.0	0755.5	2.0	4.8			
	1470	POTS	3	S	0755.0	0755.7	4.0	11			
	2650	DWIN	45	C	0758.0	0759	2.0	40	20		
	2650	DWIN	41	F	0811.0	0818	13.0	60	20		
	650	GORK	23	GRF	0813.7		46.3				
	430	KRAK	46	C	0814.0	0816.0	3.0	200	40		
	100	GORK			0814.0	0816.7		4000			
	100	GORK			0814.0	0827.8		360 D			
	100	GORK	41	F	0814.0	0814.1	25.5	360			
	100	GORK			0814.0	0839.5		360			
	200	GORK			0814.4	0839.6		150			
	200	GORK			0814.4	0831.3		150			
	200	GORK	41	F	0814.4	0828.1	25.5	150 D			
	408	TRST	41	F	0815.0	0816.6	3.0	130			79L
	6100	KISV			0815.0	0828		6			
	6100	KISV	21	GRF	0815.0	0817	22.0	5			
	237	TRST	41	F	0815.1	0816.7	4.0	86			0
	950	GORK	4	S/F	0815.4	0817.0	2.6	30			
	1470	POTS	4	S/F	0815.5	0817.0	3.5	7.5			
	650	GORK	4	S/F	0815.6	0816.4	1.3	55	13		
	3750	TYKW	5	S	0816.0	0816.7	1.5	6	2		
	930	BORD	46	C	0816.0	0817	1.0	121	8		
	600	UCCL	4	S/F	0816.0	0816.5	1.0	84	30		
	2000	TYKW	45	C	0816.0	0817.0	1.5	8	1.5		
	1000	TYKW	45	C	0816.0	0817.0	2.0	58	4		
	3000	POTS	1	S	0816.0	0816.5	3.0	5.8			
	1415	MANI	4	S/F	0816.0	0818.3	3.4	16.0	5.3		
	9100	GORK	1	S	0816.1	0817.1	2.5	7.5	3		
	810	KRAK	2	S/F	0816.2	0816.5	.7	100	15		
	113	POTS	42	SER	0816.4	0817.7	23.0	150	2		III
	606	MANI	4	S/F	0816.5	0817.2	3.7	137.3	45.8		
	430	KRAK	42	SER	0817.0		22.5	35			
	10715	DWIN	45	C	0817.0	0818	4.0	275	150		
	930	BORD	41	F	0824.0	0824.2	.5	16	1		
	127	TORN	41	F	0826.9	0827.9	9.5	200 U			
	9100	GORK	20	GRF	0827.0	0828.4	15.0	7	3		
	650	GORK	2	S/F	0827.1	0827.7	1.4	11.5	2.5		
	237	TRST	41	F	0827.7	0828.1	12.1	280			6L
	327	TRST	41	F	0827.7	0839.5	12.1	79			11L
	234	POTS	4	S/F	0827.9	0828.1	.5	530	90		III/V
	808	ONDR	42	SER	0835.0		148.0	586	10		
	2650	DWIN	45	C	0840.0	0841	2.0	50	30		
	6100	KISV	1	S	0853.0	0854.5	3.0	4			
	10715	DWIN	4	S/F	0854.0	0855	3.0	100	50		
	2650	DWIN	4	S/F	0854.0	0855	3.0	150	100		
	2950	GORK	21	GRF	0856.1		78.0				
	9100	GORK	1	S	0856.4	0856.7	2.7	4.4	2		
	600	UCCL	4	S/F	0857.0	0858	1.2	96	25		
	200	GORK			0857.2	0901.7		40			
	200	GORK	41	F	0857.2	0858.7	5.1	45 D			
	237	TRST	41	F	0857.3	0858.7	1.6	200			1L,VAR POL
	950	GORK	4	S/F	0857.7	0858.6	6.0	70 D			
	430	KRAK	2	S/F	0858.0	0859.0	1.2	80	20		
	930	BORD	45	C	0858.0	0858.6	1.0	627	62		
	1470	POTS	3	S	0858.0	0858.6	1.5	420			
	650	GORK	4	S/F	0858.1	0858.8U	1.1	190	20		
	204	IZMI	8	S	0858.2	0858.2	.5	700	300		

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DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	POLARIZATION OR REMARKS
				UT	UT	MINUTES	PEAK	MEAN		
29	100	GORK		0858.2	0858.7		7700			
	408	TRST	42 SER	0858.2	0858.7	.8	44			62L
	327	TRST	42 SER	0858.2	0858.7	.8	150			4R
	2950	GORK	1 S	0858.2	0858.6	.7	1.9			
	100	GORK	46 C	0858.2	0858.3	1.1	300			
	810	KRAK	8 S	0858.2U	0858.5U	.5	470			
	234	POTS	4 S/F	0858.2	0858.7	.6	750	35		III
	113	POTS	4 S/F	0858.3	0858.7	.7	7000	1400		III
	3000	POTS	8 S	0858.5	0858.6	.6	18			
	606	MANI	4 S/F	0858.6	0859.3	3.6	183.0	61.0		
	1415	MANI	47 GB	0858.8	0859.3	2.5	748.5	249.5		
	1470	POTS	3 S	0902.0	0902.8	2.0	9.2			
	810	KRAK	46 C	0905.0U	0905.5U	5.0	320			
	1415	MANI	4 S/F	0910.0	0918.9	13.7	77.4	25.8		
	650	GORK	22 GRF	0910.2		55.8				
	950	GORK	46 C	0910.5	0912.1	18.0	60			
	950	GORK		0910.5	0918.0		75			
	1470	POTS		0910.5	0915.4		24			
	1470	POTS	42 SER	0910.5	0912.0	6.7	34			
	606	MANI	47 GB	0911.0	0914.1	13.8	612.1	204.0		
	930	BORD	46 C	0911.0	0918.2	13.0	99	10		
	650	GORK	46 C	0911.0	0915.3	7.2	400			
	600	UCCL	4 S/F	0911.0	0913	2.5	220	70		
	650	GORK		0911.0	0918.0		230			
	327	TRST	41 F	0911.7	0915.3	4.0	67			85L
	408	TRST	41 F	0911.7	0915.3	3.6	190			76L
	430	KRAK	46 C	0912.0	0914.0	4.0	360			
	200	GORK		0912.7	0926.7		165			
	200	GORK	41 F	0912.7	0918.3	16.0	7000 D			
	2950	GORK	1 S	0913.0	0913.1	.3	7.6	3.8		
	2695	MANI	4 S/F	0913.6	0918.9	7.1	58.2	19.4		
	2950	GORK	1 S	0914.3	0915.2	1.0	9.5			
	600	UCCL	4 S/F	0914.5	0915	1.0	240	50		
	11800	BERN	47	0915.6	0918.3	5.0	400.0D			ONLY PAPER REC
	10400	BERN	47	0915.6	0918.3	5.0	810.0			ONLY PAPER REC
	8400	BERN	47	0915.6	0918.3	5.0	243.0D			ONLY PAPER REC
	19600	BERN	47	0916.6	0918.3	3.0	927.0			ONLY PAPER REC
	35000	BERN	47	0917.0	0918.3	2.0	566.0			ONLY PAPER REC
	9100	GORK	29 PBI	0919.0	0919.0	11.0	44			
	9100	GORK	4 S/F	0917.0	0918.2	2.0	680			
	6100	KISV	8 S	0917.0	0918.5	5.0	199			
	3100	CRIM	3 S	0917.0	0918.0	3.0	114	38		
	600	UCCL	4 S/F	0917.0	0917.5	5.0	220	20		
	237	TRST	41 F	0917.2	0918.2	5.8	2400 D			7L
	204	IZMI	5 S	0917.2	0918.0	2.8	8000	3000		
	327	TRST	42 SER	0917.2	0918.3	2.0	410			0
	100	GORK	46 C	0917.2	0917.6	1.8	7750			
	100	GORK		0917.2	0918.6		4000			
	3000	POTS	3 S	0917.2	0918.2	5.3	60			
	9500	POTS	3 S	0917.2	0918.2	4.3	590			
	1470	POTS	29 PBI	0917.4	0918.4	12.0	86			
	127	TORN	7 C	0917.5	0918.4	1.8	2300	1300		
	430	KRAK	4 S/F	0917.5	0918.0	4.5	120	25		
	8800	MANI	47 GB	0917.6	0919.0	3.1	696.1	232.0		
	113	POTS	42 SER	0917.6	0918.2	39.0	28000 D			III
	234	POTS	42 SER	0917.6	0918.2	39.0	110000			III/V
	4995	MANI	4 S/F	0917.7	0919.0	3.0	117.7	39.2		
	2950	GORK	3 S	0918.0	0918.3	3.3	54	27		
	408	TRST	42 SER	0918.1	0918.2	1.0	400			0
	127	TORN	4 S/F	0925.9	0926.9	2.0	410	60		
	100	GORK	8 C	0926.2	0926.4	.4	7750			
	430	KRAK	8 S	0926.5	0927.3	1.0	100			
	3100	CRIM	3 S	0928.0	0928.5	3.0	58	19		
	1415	MANI	47 GB	0935.7	0941.6	7.8	1646.7	548.9		
	2695	MANI	4 S/F	0939.5	0941.0	3.5	46.6	15.5		
	4995	MANI	4 S/F	0939.5	0942.1	4.0	55.5	18.5		
	950	GORK	47 GB	0939.5	0942.0	4.0	2600			
	930	BORD	45 C	0940.0	0942	4.0	2946	700		
	600	UCCL	46 C	0940.0	0955.5	26.0	850	54		
	204	IZMI	20 GRF	0940.0	0941.0	9.0	400	200		
	100	GORK		0940.0	0940.8		2800			
	650	GORK	4 S/F	0940.0	0942.5	5.0	870			
	430	KRAK		0940.0	0957.0U		420 D			
	430	KRAK		0940.0	0955.5		420 D			
	6100	KISV		0940.0	0941.5		50			
	100	GORK	46 C	0940.0	0940.1	1.8	570			
	6100	KISV	45 C	0940.0	0940.5	4.0	13			
	430	KRAK	48 C	0940.0	0942.0U	21.0	420 D	100		
	200	GORK	41 F	0940.0	0941.2	17.3	500			
	200	GORK		0940.0	0956.7		1700			
	1470	POTS	4 S/F	0940.0	0941.2	3.0	105			
	3000	POTS	4 S/F	0940.0	0940.5	3.0	38			
	8400	BERN	4	0940.0	0941.4	2.0	37.0			ONLY PAPER REC
	9500	POTS	28 PRE	0940.0	0941.3	3.0	44			
	10400	BERN	4	0940.0	0941.4	2.0	49.0			ONLY PAPER REC

SOLAR RADIO EMISSION
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DAY OF MONTH	FREQUENCY	STATION	TYPE		STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	POLARIZATION OR REMARKS
29	11800	BERN	4		0940.0	0941.4	2.0	42.0			ONLY PAPER REC
	2950	GORK	45	C	0940.1	0940.6	2.9	36			
	2950	GORK			0940.1	0941.3		29			
	9100	GORK	29	PBI	0940.2	0941.6	7.4	14			
	9100	GORK	4	S/F	0940.2	0941.4	1.4	50			
	8800	MANI	4	S/F	0940.8	0942.0	2.7	69.6	23.2		
	606	MANI	4	S/F	0940.8	0942.0	4.0	72.1	24.0		
	237	TRST	47	GB	0944.0E	0944.0	5.5D	56 D			72L
	327	TRST	47	GB	0944.0E	0958.0	20.0D	130			69L,OSCILLATION
	408	TRST	47	GB	0946.1	0957.0	20.0	230			71L
	650	GORK			0948.9	0954.6		1200			
	650	GORK			0948.9	0956.5		1500			
	650	GORK	46	C	0948.9	0953.0	11.0	60			
	930	BORD	45	C	0951.0	0955.4	9.0	2946 D	100		
	950	GORK	47	GB	0951.2	0956.2	6.3	7100			
	6100	KISV	8	S	0954.0	0955.5	2.0	99			
	11800	BERN	3		0954.4	0955.3	3.0	335.0			ONLY PAPER REC
	10400	BERN	3		0954.4	0955.3	3.0	271.0			ONLY PAPER REC
	8400	BERN	3		0954.4	0955.3	3.0	164.0			ONLY PAPER REC
	1470	POTS	4	S/F	0954.5	0955.8	5.0	1700			
	3000	POTS	3	S	0954.5	0955.0	2.5	90			
	3100	CRIM	3	S	0954.5	0955.5	2.5	141	47		
	9100	GORK	29	PBI	0954.6	0956.3	6.7	25			
	9100	GORK	4	S/F	0954.6	0955.4	1.7	230			
	2950	GORK	3	S	0954.7	0955.3	2.9	90	45		
	127	TORN	47	GB	0954.7	0956.2	7.0	570	70		SATURATED
	9500	POTS	4	S/F	0954.7	0955.2	5.3	240			
	35000	BERN	47		0954.9	0955.3	2.0	492.0			ONLY PAPER REC
	19600	BERN	47		0954.9	0955.3	2.0	567.0			ONLY PAPER REC
	237	TRST	41	F	0954.9	0955.3	2.3	270			20L,VAR POL
	408	TRST	42	SER	0955.0	0955.1	.5	850			5L,VAR POL
	204	IZMI	41	F	0955.0	0955.5	2.5	800	450		
	327	TRST	41	F	0955.0	0955.1	1.7	810			18L,VAR POL
	100	GORK	8	C	0955.0	0955.2	1.4	78000			
	1415	MANI	47	GB	0955.3	0956.0	3.7	898.2	299.4		
	430	KRAK	42	SER	1001.0	1003.7	23.5	80			
	430	KRAK			1001.0	1013.5		70			
	430	KRAK			1001.0	1024.0		55			
	6100	KISV	4	S/F	1011.0	1014.5	9.0	10			
	9500	POTS	3	S	1013.5	1014.4	4.0	14			
	8400	BERN	1		1013.6	1014.5	2.0	11.0			ONLY PAPER REC
	11800	BERN	1		1013.6	1014.5	2.0	10.0			ONLY PAPER REC
	10400	BERN	1		1013.6	1014.5	2.0	16.0			ONLY PAPER REC
	810	KRAK	8	S	1014.0	1014.0	.1	8			
	9100	GORK	1	S	1014.1	1014.5	51.5	18	9		
	810	KRAK	8	S	1022.5	1022.5	.1	8			
	810	KRAK	8	S	1024.7	1024.7	.1	11			
	810	KRAK	2	S/F	1028.0	1028.3	1.0	25	2		
	430	KRAK	2	S/F	1028.5	1028.8	1.0	140	15		
	650	GORK			1031.0	1042.8		16			
	650	GORK			1031.0	1042.1		33			
	650	GORK	41	F	1031.0	1031.0	17.8	4.5			
	650	GORK			1031.0	1041.3		30			
	237	TRST	42	SER	1041.0	1042.8	2.6	760			19L,VAR POL
	430	KRAK	46	C	1041.0	1041.5	2.5	200			
	430	KRAK			1041.0	1043.0		180			
	200	GORK	4	S/F	1041.0	1042.8	2.4	230			
	327	TRST	41	F	1041.2	1042.8	2.3	420			19L,VAR POL
	100	GORK			1041.2	1042.9		3000			
	408	TRST	41	F	1041.2	1042.8	2.0	160			19L,VAR POL
	100	GORK	46	C	1041.2	1041.5	2.3	300			
	810	KRAK	8	S	1041.3	1041.5	.2	15			
	600	UCCL	41	F	1041.5	1041.7	2.0	30	5		
	113	POTS	41	F	1041.6	1042.8	1.8	600	30		III
	930	BORD	46	C	1042.5	1042.7	.7	90	3		
	810	KRAK	2	S/F	1042.7	1042.7	.7	60	13		
	950	GORK	2	S/F	1042.7	1042.9	.5	11			
	234	POTS	4	S/F	1042.7	1042.8	.5	1700	300		III
	430	KRAK	41	F	1117.5		37.5	60	9		
	650	GORK	2	S/F	1120.8	1121.7	1.0	9.5			
	430	KRAK	46	C	1135.0	1137.5	11.5	390 D			
	430	KRAK			1135.0	1139.5U		390 D			
	430	KRAK			1135.0	1144.8		150			
	810	KRAK	4	S/F	1137.5	1138.3	2.0	150	40		
	808	ONDR	45	C	1139.0	1141.5	4.5	42	3		
	930	BORD	46	C	1139.0	1141.5	3.0	103	4		
	1470	POTS	8	S	1139.2	1139.7	.8	9.0			
	408	TRST	41	F	1139.3	1139.5	2.3	280			79L
	505	TRST	41	F	1139.3	1140.3	1.3				
	606	TRST	41	F	1139.4	1139.8	1.2				
	127	TORN	8	S	1139.4	1139.9	1.0	530	260		
	113	POTS	42	SER	1139.4	1140.0	3.0	700	20		III
	600	UCCL	4	S/F	1139.5	1140	1.5	144	30		
	237	TRST	41	F	1139.6	1141.4	3.0	180			15L
	327	TRST	41	F	1140.1	1141.4	2.0	67			8L,VAR POL

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DAY OF MONTH	FREQUENCY	STATION	TYPE		STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	POLARIZATION OR REMARKS
29	234	POTS	4	S/F	1141.4	1141.5	.6	200	7		III
	9400	HUAN		S	1207.5	1208.2	1.5	14.0	6.7		0
	237	TRST	42	SER	1207.8	1208.1	.6	61			5L
	430	KRAK	46	C	1213.8	1215.5	3.5	140			
	1470	POTS	1	S	1216.3	1216.6	1.2	3.1			
	3000	POTS	8	S	1216.5	1216.7	1.0	14			
	2800	OTTA	8	S	1216.7	1216.7	.6	21.0			
	234	POTS	4	S/F	1217.0	1217.1	.3	2400	800		III/V
	237	TRST	41	F	1217.0	1217.1	1.4	890			15L,VAR POL
	408	TRST	42	SER	1217.0	1217.2	.3	70			1L
	327	TRST	42	SER	1217.0	1217.0	.3	460			34L
	113	POTS	8	S	1217.1	1217.2	.2	2100	700		III
	9400	HUAN		S	1220.9	1221.9	1.5	12.3	4.9		0
	430	KRAK	41	F	1233.0U		50.0	35	10		
	810	KRAK	41	F	1244.5	1246.0	5.0	70			
	1470	POTS	28	PRE	1248.0	1249.6	3.5	10			
	930	BORD	46	C	1248.2	1249.7	2.4	48	4		
	237	TRST	41	F	1248.2	1248.3	12.4	98			32L
	3000	POTS	1	S	1249.0	1249.6	2.5	5.8			
	600	UCCL	41	F	1249.5	1253.5	4.5	66	10		
	810	KRAK	1	S	1325.5U	1326.0U	2.0U	9	3		
	237	TRST	41	F	1333.1	1334.4	1.9	94			66L
	810	KRAK	8	S	1345.0	1345.0	.1	9			
	9400	HUAN		S	1350.6	1400.3	16.0	5.3	2.6		0
	2800	OTTA	1	S	1357.0	1400	6.0	2.8	1.0		
	930	BORD	46	C	1357.3	1400.4	4.2	202	3		
	600	UCCL	41	F	1357.5	1358	4.0	75	15		
	808	ONDR	42	SER	1358.0	1444	67.0	232	3		
	9500	POTS	20	GRF	1358.0	1400.0	5.0	7.7			
	3000	POTS	20	GRF	1358.0	1400.2	5.0	7.6			
	7000	SAOP	4	S/F	1358.4	1400.0	5.0	20.0			17R
	1470	POTS	8	S	1358.5	1358.8	.5	41			
	430	KRAK	8	S	1359.0	1359.2	.5	30			
	237	TRST	41	F	1411.8	1419.6	13.2	65			18L,VAR POL
	7000	SAOP	3	S	1414.2	1414.6	1.6	17.0			42R
	600	UCCL	3	S	1414.5	1414.7	.4	25	10		
	9400	HUAN		S	1414.5	1442.4	54.5	10.5	6.2		0
	9500	POTS	1	S	1414.5	1414.7	.9	6.1			
	3000	POTS	3	S	1414.5	1414.7	.5	8.6			
	3000	POTS	3	S	1418.5	1420.1	4.0	13			
	113	POTS	4	S/F	1418.8	1421.1	2.3	700	50		III
	2800	OTTA			1419.0	1420	3.0D	9.8			
	1470	POTS	3	S	1419.0	1420.1	3.5	13			
	2800	OTTA	21	GRF	1419.0	1450	70.0D	6.4			
	930	BORD	46	C	1441.0	1444	9.0	582	10		
	2800	OTTA	46F	C	1442.0	1447.3	8.0	18.4	3.6		
	237	TRST	41	F	1442.1	1447.7	6.8	270			19L,VAR POL
	327	TRST	41	F	1442.3	1447.6	7.2	140			3R,OSCILLATIONS
	790	TRST	41	F	1443.0	1444.1	5.2				
	7000	SAOP	45	C	1443.0	1447.5	8.0	34.0			16R
	606	TRST	41	F	1443.0	1444.1	5.5				
	600	UCCL	4	S/F	1443.0	1444.3	3.0	600	220		
	505	TRST	41	F	1443.4	1444.1	6.0				
	408	TRST	41	F	1443.5	1448.3	6.5	350			76L
	228	HARS	45	C	1445.0	1445.8	4.0	165	55		
	600	UCCL	4	S/F	1447.0	1447.2	3.0	110	35		
	10400	BERN	1		1447.0	1447.5	2.0	16.0			ONLY PAPER REC
	11800	BERN	1		1447.0	1447.5	2.0	11.0			ONLY PAPER REC
	8400	BERN	1		1447.0	1447.5	2.0	11.0			ONLY PAPER REC
	930	BORD	46	C	1500.5	1504.2	4.8	199	6		
	2800	OTTA	40	F	1501.2	1502	3.0	2.8			
	2800	OTTA	21	GRF	1640.0	1713	55.0	2.8	1.4		
	2800	OTTA	8	S	1729.3	1729.4	.5	6.2			
	930	BORD	41	F	1729.4	1729.5	2.6	202	4		
	930	BORD	41	F	1756.0	1757.8	2.0	41	3		
	9400	HUAN	8	S	1814.6	1814.8	.6	28.1	16.4		R
	2800	OTTA	1	S	1816.0	1816.7	2.0	2.4	1.2		
	9400	HUAN		S	1816.2	1816.8	1.4	10.5	4.4		0
	9400	HUAN		S	1854.8	1855.2	2.0	8.8	5.0		R
	9400	HUAN		S	1920.4	2042.3	141.2	14.0	8.8		R
	2800	OTTA	8	S	1937.0	1937	.3	5.2			
	9400	HUAN		S	1940.1	1941.0	2.8	7.0	2.6		R
	9400	HUAN		S	2014.2	2014.8	1.2	68.4	30.2		R
	2800	OTTA	2	S/F	2048.0	2049	3.0	2.8	1.7		
	9400	HUAN		S	2048.1	2049.0	3.0	45.6	20.7		R
	2800	OTTA	1	S	2119.2	2119.7	1.0	2.8	1.4		
	9400	TYKW	45	C	2129.5	2132.3	3.5	18	7		
	9400	HUAN		S	2129.6	2131.0	3.2	17.5	9.2		R
	9400	TYKW	29	PBI	2133.0		15.0	4	2		
	2800	OTTA	1	S	2135.5	2136.3	4.0	3.4	1.7		
	1415	MANI	1	S	2234.0	2235.1	2.5	9.9	3.3		
	606	MANI	1	S	2234.2	2235.2	2.3	3.6	1.2		
	8800	MANI	3	S	2234.3	2235.2	2.0	58.7	19.6		
	4995	MANI	3	S	2234.3	2235.2	2.2	24.0	8.0		
	2695	MANI	3	S	2234.5	2235.2	1.8	17.1	5.7		

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29	1000	TYKW	42 SER	2258.5	2304.2	12.0	280	10		
	606	MANI	4 S/F	2303.6	2304.5	6.9	16.4	5.5		
	1415	MANI	4 S/F	2303.8	2310.0	7.2	38.0	12.7		
	1000	TYKW	42 SER	2317.0	2318.8	5.0	110	10		
30	200	GORK	43 NS	0642.0		196.0		5		
	260	ONDR	44 NS	0756.0E		426.0D	27			
	1415	MANI	3 S	0209.1	0209.5	1.2	144.4	48.1		
	606	MANI	3 S	0209.1	0209.4	.7	91.0	30.1		
	9400	TYKW	5 S	0252.0	0252.7	1.5	7	1.5		
	3750	TYKW	5 S	0252.0	0252.7	2.0	5	1		
	1000	TYKW	5 S	0252.5	0252.8	1.0	1	.3		
	1000	TYKW	42 SER	0313.0	0313.7	5.0	13	1.5		
	1000	TYKW	42 SER	0322.0	0326.2	5.5	23	2.5		
	3750	TYKW	5 S	0322.0	0322.7	1.5	1	.3		
	9400	TYKW	5 S	0322.4	0322.6	1.0	4	1.5		
	3750	TYKW	8 S	0348.4	0348.5	.2	1	.3		
	9400	TYKW	8 S	0348.4	0348.5	.2	6	2		
	1000	TYKW	8 S	0348.4	0348.5	.2	14	5		
	100	HIRA	46 C	0429.1	0429.2	1.2	4300	460		WL
	200	HIRA	46 C	0429.1	0429.4	1.2	250	70		WL
	1000	TYKW	45 C	0436.0	0436.9	1.0	4	.7		
	1000	TYKW	45 C	0441.0	0441.3	1.0	2.5	.8		
	1000	TYKW	45 C	0449.5	0450.0	1.5	3	.5		
	1000	TYKW	42 SER	0458.5	0501.7	5.0	5	.3		
	1000	TYKW	45 C	0536.0	0536.2	.8	33	10		
	2000	TYKW	5 S	0536.0	0536.3	1.0	2	.5		
	200	GORK	2 S/F	0649.5	0650.2	1.8	40 D			
	100	GORK	46 C	0649.8	0650 U	1.4	300 D			
	100	GORK		0649.8	0650.5		220			
	100	HIRA	46 C	0649.8	0650.1	1.8	6200	510		WR
	650	GORK	41 F	0649.9	0650.1	8.1	6			
	650	GORK		0649.9	0656.1		40			
	234	POTS	4 S/F	0650.0	0650.2	.3	980	150		III
	950	GORK	1 S	0650.0	0650.2	.5	3.5			
	113	POTS	4 S/F	0650.0	0650.2	.8	9800	20		III
	1000	TYKW	5 S	0650.0	0650.2	.5	8	2		
	33	UPIC	4 S/F	0650.0	0650.1	1.3				
	2950	GORK	1 S	0650.0	0650.2	.7	2.8	1.4		
	6100	KISV	20 GRF	0650.0	0656.5	15.0	5			
	2000	TYKW	5 S	0650.0	0650.2	1.0	3	.7		
	204	IZMI	5 S	0650.0	0650.0	.5	290	150		
	6100	KISV		0650.0	0652.5		3			
	3750	TYKW	5 S	0650.0	0650.2	1.0	3	.7		
	200	HIRA	46 C	0650.0	0650.1	1.2	550	100		WL
	29	UPIC	4 S/F	0650.0	0650.1	.5				
	1000	TYKW	45 C	0655.8	0656.1	1.0	3.5	.8		
	950	GORK	1 S	0656.0	0656.2	.4	3			
	3100	CRIM	20 GRF	0717.0	0742.0	120.0	6	3		
	9100	GORK	1 S	0749.0	0749.7	2.0	3.8	1.5		
	2950	GORK	1 S	0749.0	0749.7	1.5	1.9	.9		
	650	GORK	1 S	0749.0	0750.0	1.3	5			
	950	GORK	1 S	0749.3	0749.9	.9	6			
	1000	TYKW	45 C	0749.3	0749.6	1.0	4.5	1.5		
	100	GORK		0809.6	0814.1		570			
	100	GORK	41 F	0809.6	0809.7	8.2	160			
	100	GORK		0809.6	0811.9		340			
	100	GORK		0809.6	0817.7		115			
	113	POTS	42 SER	0809.7	0814.1	5.0	650	8		III
	200	GORK	2 S/F	0813.5	0813.9	.9	40			
	2950	GORK	20 GRF	0840.5	0846.9	37.0	3.8	1.8		
	9100	GORK	20 GRF	0846.0	0906.5	45.0	6	3		
	127	TORN	41 F	0852.4	0855.4	9.0	40			
	100	GORK	4 S/F	0857.0	0858.8	6.0	160			
	650	GORK	1 S	0857.1	0859.7	5.9	6			
	950	GORK	3 S	0859.5	0859.6	3.0	19			
	113	POTS	41 F	1004.4	1004.6	.2	140	5		III
	100	GORK	8 S	1023.8	1024 U	1.0	250 D			
	29	UPIC	42 SER	1029.0	1029.3	55.5				
	33	UPIC	42 SER	1029.2	1029.4	55.5				
	2800	OTTA	21 GRF	1240.0	1435	340.0	10.6	5.6		
	237	TRST	47 GB	1247.0	1340.0	180.0	59			88L
	234	POTS	27 RF	1247.0	1340	96.0D	90			RISE+I
	113	POTS	27 RF	1306.0	1335	78.0D	56			RISE+I
	1470	POTS	40 F	1307.0	1321.5	64.0	12			
	228	HARS	27 RF	1312.5	1331.2	102.5	105	50		
	127	TORN	27 RF	1318.0		50.0		90		
	9400	HUAN	S	1320.6	1400.2	84.9	8.1	3.4		R
	930	BORD	45 C	1335.7	1337.3	2.5	34	7		
	930	BORD	45 C	1343.0	1344.8	7.0	24	5		
	237	TRST	42 SER	1440.4	1440.7	1.4	320			10L, VAR POL
	327	TRST	42 SER	1440.4	1441.1	.9	140			5L
	29	UPIC	42 SER	1440.5	1441.6	116.0				
	33	UPIC	42 SER	1440.5	1525.4	116.3				
	536	ONDR	45 C	1440.5	1441.3	3.5	81	15		

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30	930	BORD	41	F	1441.0	1443.5	3.0	22	3		
	408	TRST	42	SER	1441.1	1441.1	.4	47			70L
	9400	HUAN		S	1510.1	1527.8	29.1	9.7	1.2		R
	11800	BERN	4		1524.7	1525.8	4.0	21.0			ONLY PAPER REC
	10400	BERN	4		1524.7	1525.8	4.0	25.0			ONLY PAPER REC
	8400	BERN	4		1524.7	1525.8	4.0	21.0			ONLY PAPER REC
	237	TRST	41	F	1524.9	1529.4	4.5	210			22L,VAR POL
	327	TRST	41	F	1524.9	1529.2	4.5	240			27L
	408	TRST	41	F	1524.9	1526.4	14.3	170			74L
	930	BORD	46	C	1525.0	1525.6	4.0	31	5		
	7000	SAOP	45	C	1525.0	1525.8	4.0	26.0			19R
	2800	OTTA	2	S/F	1525.0	1525.7	4.5	3.4	1.7		
	9400	HUAN		S	1525.1	1525.8	1.7	22.7	10.6		R
	930	BORD	41	F	1538.8	1539	.4	42	2		
	327	TRST	41	F	1611.1	1616.3	11.2	170			13L
	237	TRST	41	F	1611.1	1619.9	11.2	1600			19L
	9400	HUAN		S	1620.4	1621.4	3.5	9.7	4.7		0
	2800	OTTA	2	S/F	1621.0	1622.3	2.0	2.8	1.4		
	2800	OTTA	1	S	1841.0	1842	2.0	3.4	1.5		
	7000	SAOP	4	S/F	1841.0	1842.0	1.0	24.0			13R
	9400	HUAN		S	1841.7	1842.1	1.9	17.8	7.3		0
	2800	OTTA	1	S	2049.0	2049.4	1.0	3.4	1.7		
	4995	MANI	4	S/F	2227.5	2239.3	18.0	61.2	20.4		
	1415	MANI	4	S/F	2227.5	2239.7	19.5	50.2	16.7		
	2695	MANI	4	S/F	2227.5	2239.5	18.0	69.9	23.3		
	3750	TYKW	45	C	2237.0	2240.4	9.0	34	13		
	2000	TYKW	45	C	2237.0	2239.2	9.0	65	25		
	9400	TYKW	21	GRF	2237.0	2240.7	30.0	11	6		
	1000	TYKW	45	C	2237.0	2238.7	9.0	30	5		
	1000	TYKW	29	PBI	2246.0		20.0	2	1		
	2000	TYKW	29	PBI	2246.0		25.0	5	2		
	3750	TYKW	29	PBI	2246.0		35.0	8	3		
	2000	TYKW	21	GRF	2335.0	2352	90.0	6	2.5		
	3750	TYKW	21	GRF	2339.0	2349	90.0	7	3		
31	200	GORK	44	NS	0402.0E		542.0D		10		
	260	ONDR	44	NS	0810.0E		425.0D	50	3		
	200	HIRA	44	NS	2025.0E	2119	740.0D	15	5		ML
	1000	TYKW	42	SER	0029.0	0029.4	3.0	6	1		
	3750	TYKW	5	S	0030.0	0031.5	4.0	3	1		
	2930	VORO	3	S	0048.0	0050	6.0	46			
	1000	TYKW	45	C	0048.5	0050.3	5.5	33	4.5		
	500	HIRA	46	C	0049.2	0049.7	8.0	400	70		SL
	100	HIRA	48	C	0049.3	0050.0	4.0	51000	3500		ML
	1400	SYDN	40	F	0049.4	0050.1	3.2				
	3750	TYKW	45	C	0049.5	0050.1	4.0	65	12		
	2000	TYKW	45	C	0049.5	0050.6	4.0	37	6		
	9400	TYKW	45	C	0049.5	0050.1	3.0	175	25		
	17000	NOBE	4	S/F	0049.5	0050.1	1.4	196			R
	700	SYDN	45	C	0049.8	0050.4	5.6				
	2695	MANI	3	S	0050.6	0051.3	1.4	42.6	14.2		
	1415	MANI	3	S	0050.6	0051.4	3.4	46.8	15.6		
	4995	MANI	3	S	0050.7	0051.3	2.8	86.1	28.7		
	8800	MANI	3	S	0050.8	0051.3	2.4	200.2	66.7		
	606	MANI	4	S/F	0050.9	0051.7	5.6	201.0	67.0		
	17000	NOBE	29	PBI	0050.9	0050.9	4.0	17			0
	9400	TYKW	29	PBI	0052.5		15.0	4	1.5		
	3750	TYKW	45	C	0115.0	0117.7	10.0	6	1		
	5730	IRKU	1	S	0117.5	0117.8	1.0	10			R
	2000	TYKW	8	S	0132.4	0132.5	.2	14	4		
	700	SYDN	45	C	0201.9	0202.6	.9				
	1000	TYKW	45	C	0202.0	0202.7	1.0	6	2.5		
	9400	TYKW	45	C	0202.0	0202.6	1.5	6	2.5		
	500	HIRA	8	S	0202.0	0202.0	.6	130	70		
	3750	TYKW	45	C	0202.0	0202.6	12.0	12	1		
	2000	TYKW	5	S	0202.0	0202.7	1.5	6	1.5		
	5730	IRKU	1	S	0202.3	0202.6	1.0	11			R
	100	HIRA	46	C	0202.4	0202.7	1.0	24000	2900		ML
	2000	TYKW	45	C	0206.5	0207.1	6.0	21	2		
	1400	SYDN	45	C	0206.7	0207.1	.7				
	700	SYDN	4	S/F	0206.7	0207.2	1.1				
	1000	TYKW	45	C	0206.8	0207.2	.7	82	20		
	1000	TYKW	45	C	0210.0	0211.6	2.0	5	1		
	700	SYDN	42	SER	0300.1	0300.6	.7				
	1000	TYKW	42	SER	0330.2	0330.4	1.0	147	15		
	2000	TYKW	20	GRF	0400.0	0407	40.0	1.5	.5		
	3750	TYKW	20	GRF	0404.0	0407	30.0	2	1		
	2000	TYKW	20	GRF	0510.0	0523	30.0	2	.8		
	3750	TYKW	5	S	0522.0	0523	4.0	2	.5		
	6100	KISV	3	S	0541.0	0543.5	7.0	14			
	9400	TYKW	45	C	0542.0	0542.4	2.0	17	4		
	9100	GORK	1	S	0542.0	0542.5	3.4	18	7		
	204	IZMI	5	S	0630.5	0631.5	1.0	900	550		
	234	POTS	42	SER	0630.5	0633.7	3.6	1700			III
	3750	TYKW	45	C	0630.5	0631	2.0	2	1		

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31	2000	TYKW	45 C	0630.5	0631.2	1.5	2	.7		
	1000	TYKW	5 S	0630.5	0631.2U	1.5	1.5U	.5U		
	113	POTS	42 SER	0630.6	0631.0	4.4	300			III
	650	GORK	1 S	0630.6	0631.0	.9	3.5			
	2950	GORK	1 S	0630.6	0631.0	1.9	6.5			
	200	GORK		0630.7	0633.8		120 D			
	100	GORK	41 F	0630.7	0631 U	4.2	120 D			
	100	GORK		0630.7	0634 U		120 D			
	200	GORK	41 F	0630.7	0631.3	5.5	120 D			
	950	GORK	1 S	0630.9	0631.1	.7	1.5			
	204	IZMI	5 S	0633.0	0633.0	1.2	1000	600		
	100	GORK	8 S	0643.6	0643.7U	.4	120 D			
	1000	TYKW	8 S	0707.7	0707.7	.2	16 D	4 D		
	3100	CRIM	26 FAL	0911.0	1300.0		6			
	10715	DWIN	3 S	1024.0	1024	2.0	35	20		
	2650	DWIN	1 S	1024.0	1024	1.0	20	10		
	808	ONDR	2 S/F	1027.0	1027.9	3.0	21	2		
	6100	KISV	4 S/F	1027.0	1028.7	5.0	23			
	327	TRST	41 F	1027.5	1028.6	1.7	470			1R
	408	TRST	41 F	1027.5	1028.5	1.7	120			O
	237	TRST	41 F	1027.8	1028.4	1.4	61			3R
	8400	BERN	3	1028.0	1028.5	2.0	28.0			ONLY PAPER REC
	3000	POTS	8 S	1028.0	1028.5	1.0	12			
	9500	POTS	3 S	1028.0	1028.4	2.0	26			
	536	ONDR	2 S/F	1028.2	1028.2	2.0	35	2		
	9100	GORK	3 S	1028.3	1028.6	3.8	34	6		
	930	BORD	41 F	1028.3	1028.5	1.0	30	2		
	650	GORK	4 S/F	1028.3	1028.6	1.5	34			
	950	GORK	1 S	1028.3	1028.7	2.1	16			
	2950	GORK	1 S	1028.4	1028.6	5.9	13			
	33	UPIC	3 S	1117.6	1117.8	.4				
	29	UPIC	3 S	1118.1	1118.4	.5				
	33	UPIC	2 S/F	1119.6	1119.8	.5				
	29	UPIC	2 S/F	1119.9	1120.0	.5				
	7000	SAOP	4 S/F	1122.0	1124.2	1.2	108.0			8R
	9400	HUAN	S	1123.4	1124.0	1.6	54.6	36.7		R
	3100	CRIM	3 S	1123.5	1124.5	2.0	27	9		
	3000	POTS	4 S/F	1123.5	1124.1	1.5	19			
	810	KRAK	1 S	1123.5	1124.0	1.5	15	5		
	1470	POTS	3 S	1123.5	1124.1	3.5	20			
	808	ONDR	45 C	1123.5	1124.3	7.0	16	2		
	19600	BERN	3	1123.7	1124.3	3.0	82.0			ONLY PAPER REC
	11800	BERN	3	1123.7	1124.3	3.0	68.0			ONLY PAPER REC
	930	BORD	3 S	1123.7	1124.2	2.3	25	3		
	327	TRST	41 F	1123.7	1124.0	6.3	720			1L
	8400	BERN	3	1123.7	1124.3	3.5	67.0			ONLY PAPER REC
	10400	BERN	3	1123.7	1124.3	3.0	90.0			ONLY PAPER REC
	9500	POTS	3 S	1123.7	1124.2	2.8	86			
	408	TRST	41 F	1123.7	1124.0	6.3	2300			4R
	9100	GORK	3 S	1123.8	1124.3	2.7	100	50		
	2950	GORK	3 S	1123.8	1124.5	2.4	28	14		
	536	ONDR	8 S	1124.0	1124	.2	234			
	6100	KISV	4 S/F	1124.0	1124.7	4.0	62			
	430	KRAK	8 S	1124.0	1124.0	.2	630 D			
	810	KRAK	2 S/F	1129.2	1130.0	1.0	80	20		
	930	BORD	41 F	1129.3	1129.6	1.2	25	2		
	536	ONDR	8 S	1130.0	1130	.2	20			
	33	UPIC	2 S/F	1258.8	1259.3	1.2				
	29	UPIC	2 S/F	1258.8	1259.2	1.2				
	930	BORD	20 GRF	1300.0	1316.2	23.0	15	5		
	127	TORN	8 S	1358.4	1358.9	.8	180	90		
	930	BORD	20 GRF	1424.0	1429	16.0	18	6		
	9400	HUAN	S	1516.1	1533.7	51.6	9.9	4.5		0
	930	BORD	41 F	1642.4	1643.8	2.0	26	2		
	2800	OTTA	20 GRF	1655.0	1705	105.0	3.6	1.3		
	930	BORD	41 F	1704.8	1705	4.3	230	2		
	930	BORD		1704.8	1708.6		230			
	9400	HUAN	S	1803.0	1828.8	39.7	8.3	5.5		0
	2800	OTTA	3 S	1932.8	1933	2.0	18.2	4.8		
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Reports are received routinely from the following observatories:

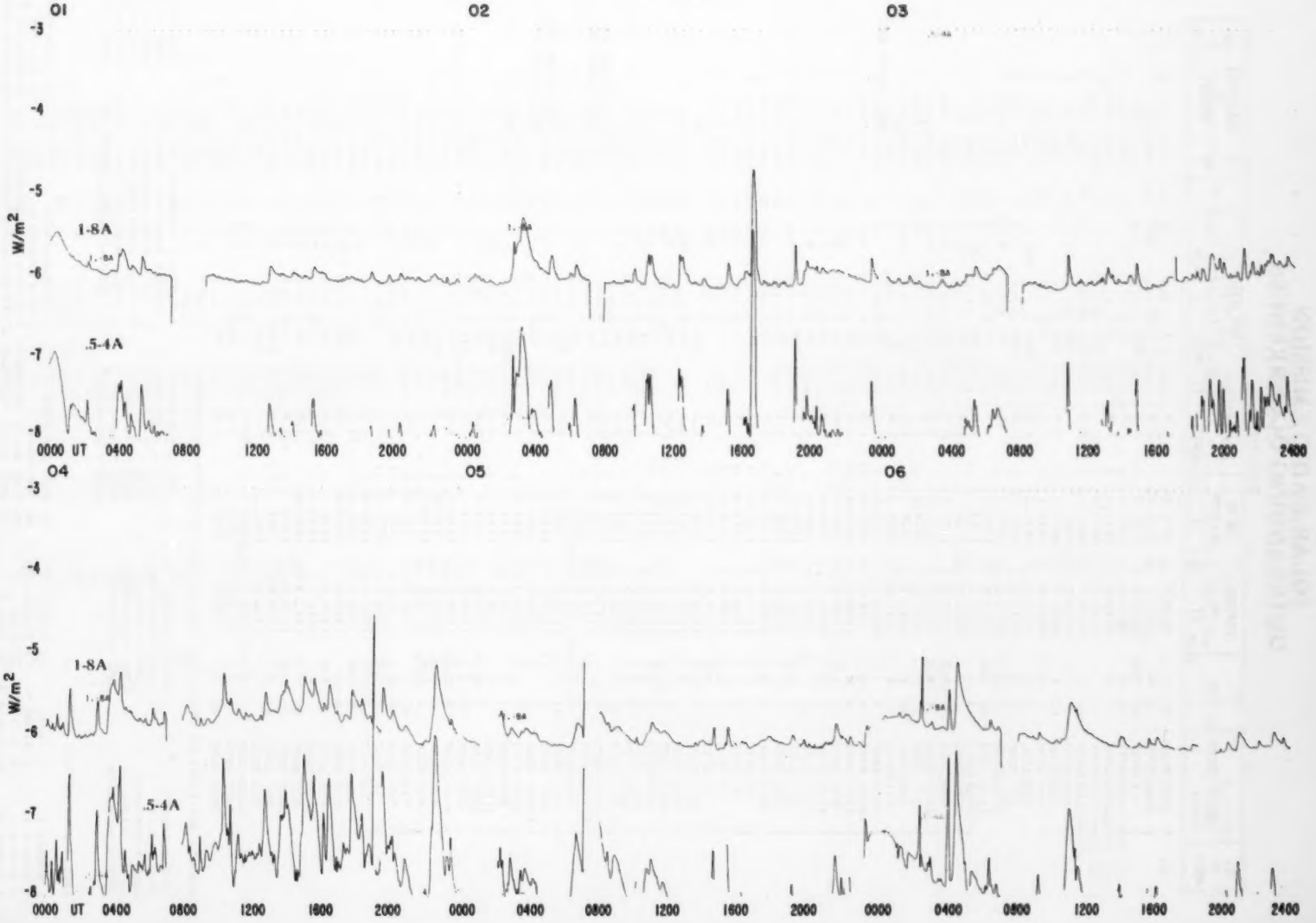
ARCE = Arcetri
BERN = Berne
BORD = Bordeaux
CRIM = Crimea
DWIN = Dwingeloo
GORK = Gorky
HARS = Harestua
HIRA = Hiraiso
HUAN = Huancayo
IRKU = Irkutsk
IZMI = IZMIRAN
KISV = Kislovo
KRAK = Krakow
MANI = Manila
NAGO = Nagoya
NOBE = Nobeyama
ONDR = Ondrejov
OTTA = Ottawa
PENT = Penticton
POTS = Potsdam
SOAP = Sao Paulo
SGMR = Sagamore Hill
SYDN = Sydney
TORN = Torun
TYKW = Toyokawa
TRST = Trieste
UPIC = Upice
VORO = Voroshilov

Explanation of Type Code:

1 Simple 1
2 Simple 1F
3 Simple 2
4 Simple 2F
5 Simple
6 Minor
7 Minor +
8 Spike
20 Simple 3
21 Simple 3A
22 Simple 3F
23 Simple 3AF
24 Rise
25 Rise A
26 Fall
27 Rise and Fall
28 Precursor
29 Post Burst Increase
30 Post Burst Increase A
31 Post Burst Decrease
32 Absorption
40 Fluctuation
41 Group of Bursts
42 Series of Bursts
43 Onset of Noise Storm
44 Noise Storm in Progr
45 Complex
46 Complex F
47 Great Burst
48 Major
49 Major +

SMS-GOES X-RAYS

MARCH 1980



SMS-GOES X-RAYS

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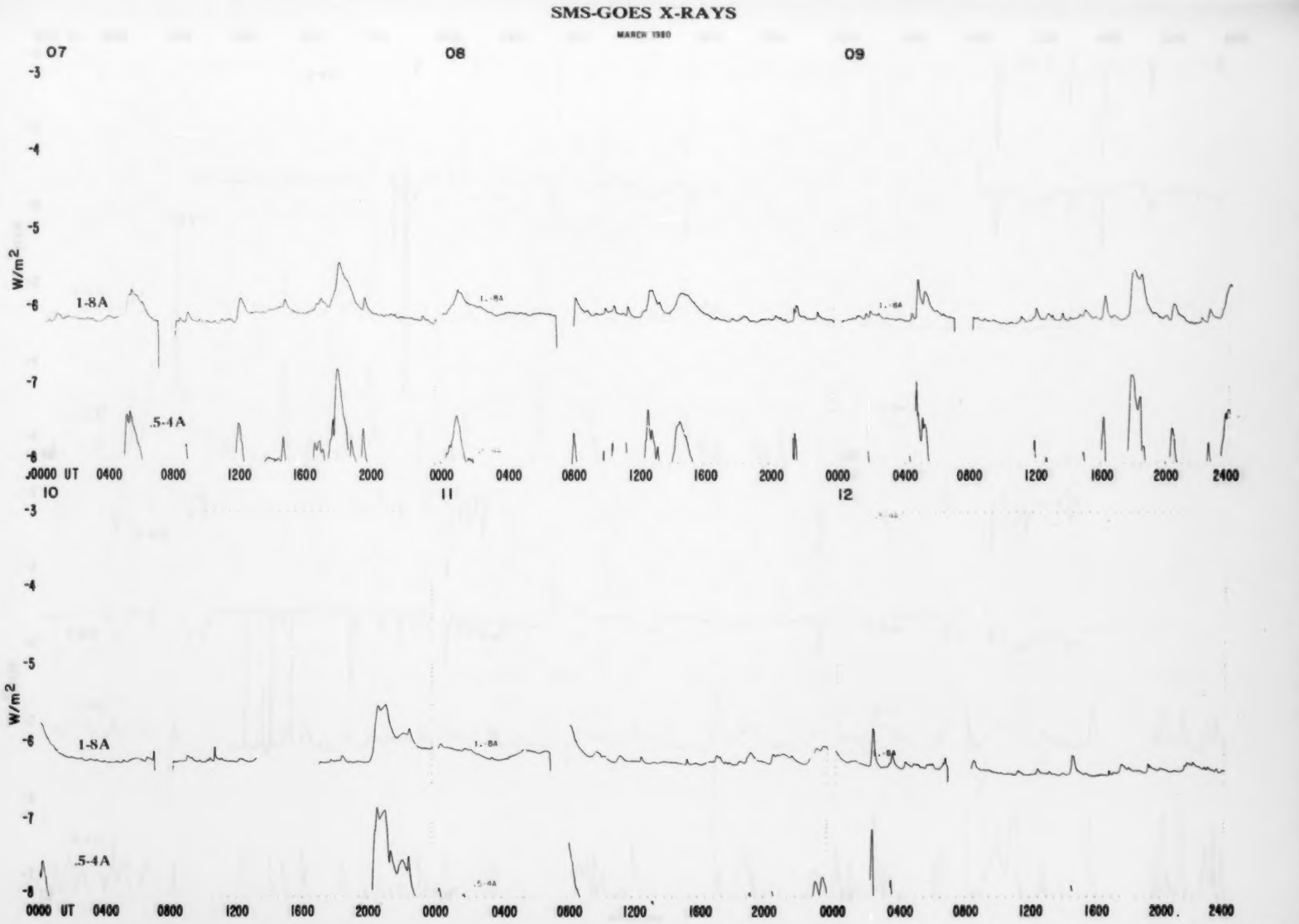
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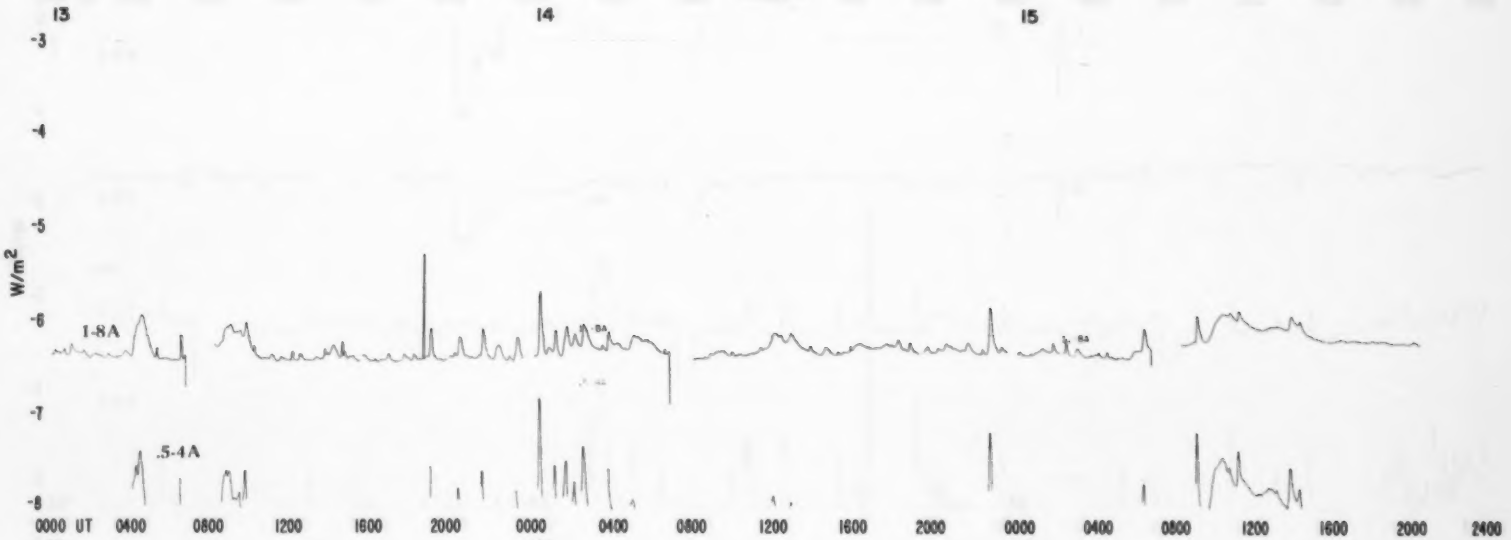

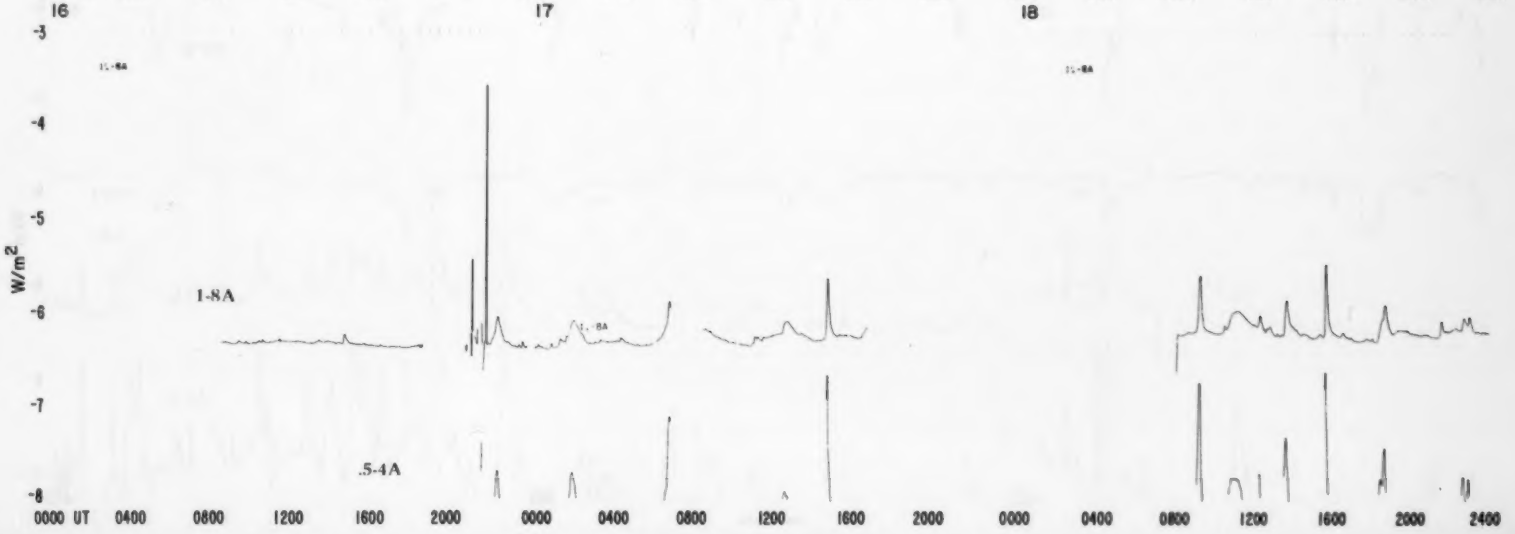

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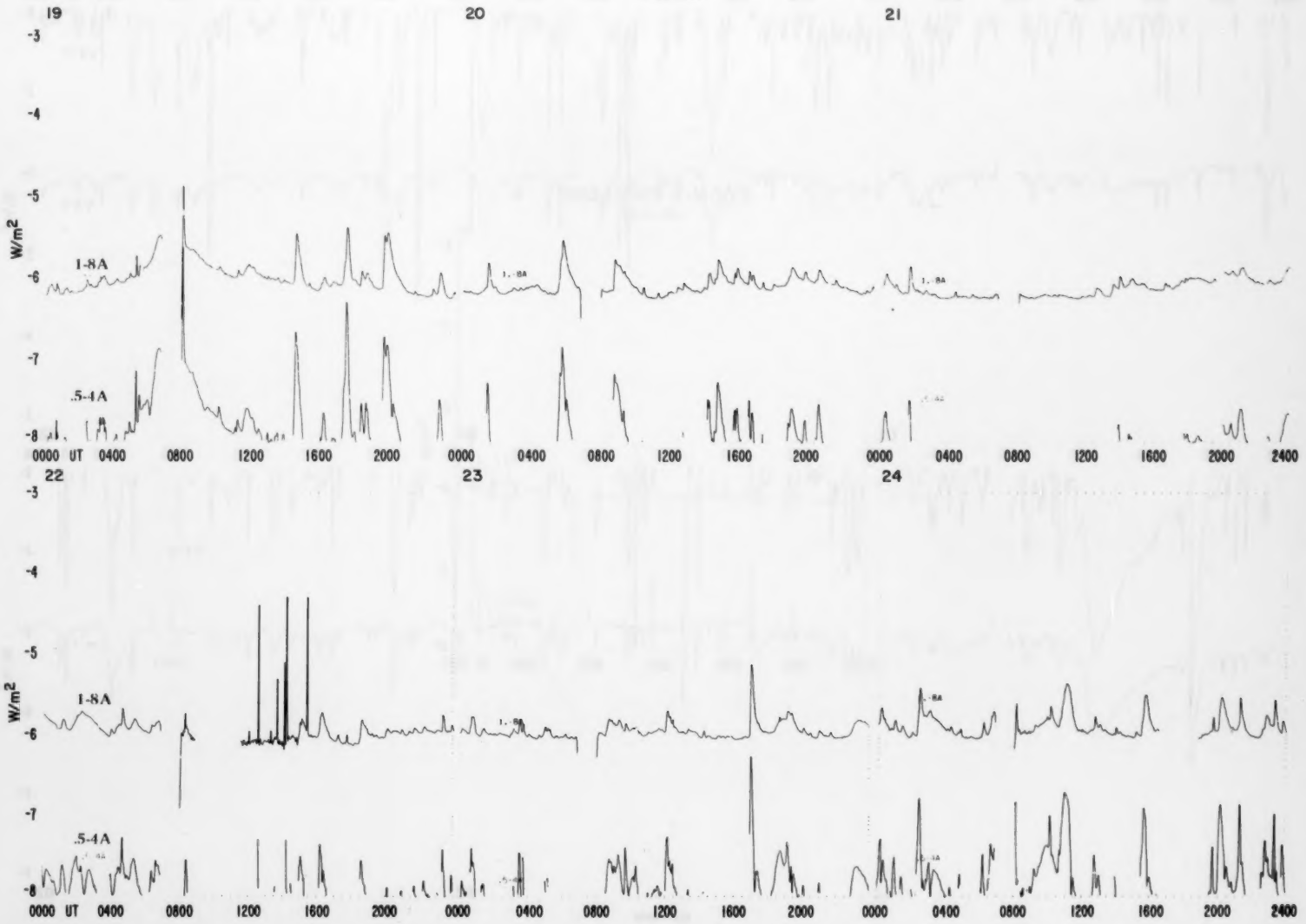

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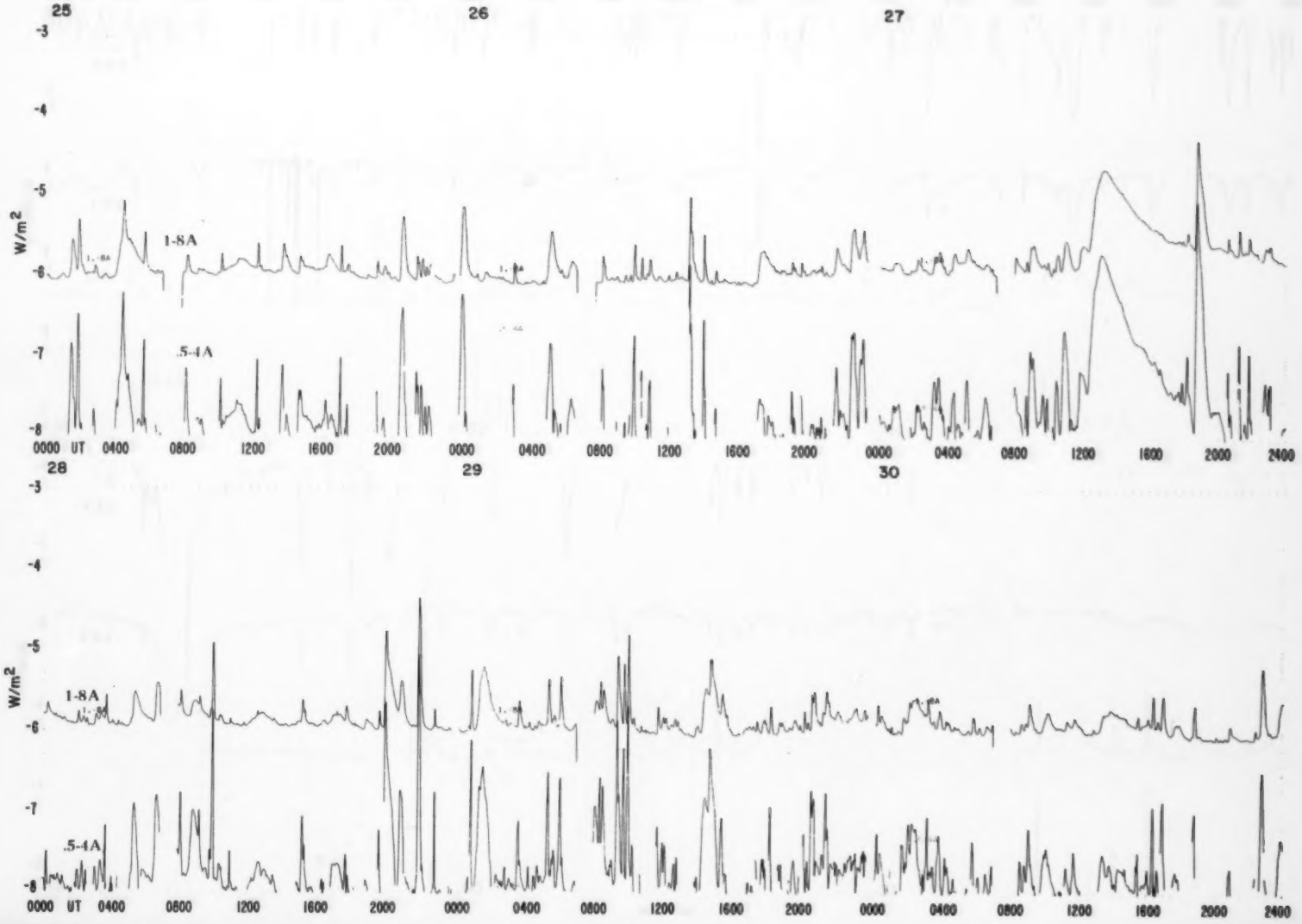

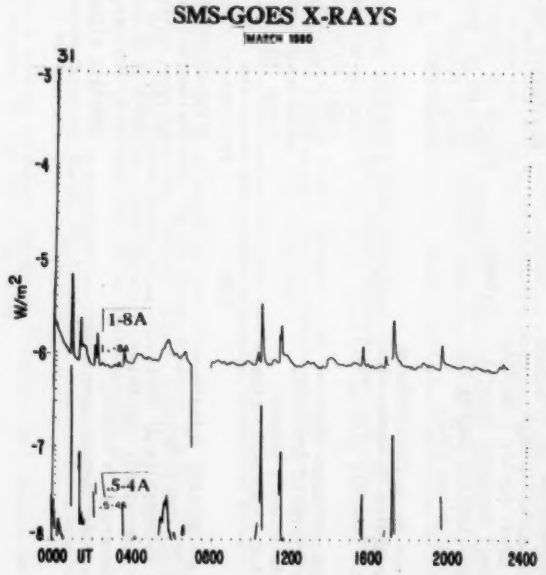
SMS-GOES X-RAYS
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SOME OTHER SOURCES OF DATA

Data Available: Some data available in publication form are cited here. A list is given, along with addresses of the responsible institutions. The WDC-A for Solar-Terrestrial Physics publishes the Toyokawa, Ottawa and Penticton radio data in its monthly publication, *Solar-Geophysical Data*. The WDC-A for Solar-Terrestrial Physics also receives most of the periodicals when they become available.

Belgium: *Bulletin d'Observations: Activite Solaire - Observations Radio-electriques Solaires - 600 MHz (Humain, Belgium)* Observatoire Royal de Belgique, Ave. Circulaire 3, Brussels, Belgium (monthly since 1962)

Canada: *Solar Noise Observations at 2800 Mc/s (Ottawa - ARO) and 2700 Mc/s (Pentiaton - DRAO)* Series C Monthly Report, National Research Council, Radio Astronomy Section Ottawa 7, Ontario, Canada (since 1947)

France: *Carte Synoptiques de la Chromosphere Solaire* Observatoire de Paris, 92 Meudon, France (monthly since 1931)

Germany: *Daily Mean Value of Solar Flux Deneity* Heinrich-Hertz Institut, 1199 Berlin-Adlershof, Rudower Chaussee 5, G.D.D. (monthly since Jul 1957)

Italy: *Solar Phenomena - Monthly Bulletin and Photographic Supplement* Osservatorio Astronomica di Roma, Monte Mario, Rome, Italy (monthly since 1958) *Osservazion Solari, Solar Flux and Distinctive Events* Osservatorio Astronomico Di Trieste (quarterly since 1965) *Solar Observations made at Catania Astrophysical Observatory* (annually since 1967)

Japan: *Monthly Report of Solar Radio Emission* Radio Astronomy Section, Research Institute of Atmospherics, Nagoya University, Toyokawa, Japan (since 1956) *Solar Activity Chart* WDC-C2, Toyokawa Observatory, Nagoya University, Toyokawa, Japan (annually since 1968) *IAU Quarterly Bulletin on Solar Activity* Tokyo Astronomical Observatory, Mitaka, Tokyo, Japan (since 1978)

Netherlands: *Geomagnetic Data* IAGA Bulletin No. 12 (1932-69), No. 32 (since 1970) IUGG Publications Office, 39 ter, Rue Gay-Lussac, Paris V, France (annually)

Taiwan: *Report on Sunspot Observations* Taiwan Provincial Weather Bureau Observatory, Taipei, Taiwan (quarterly since 1957)

USSR: СОЛНЕЧНЫЕ ДАННЫЕ *(Solar Data)* USSR Academy of Science (monthly since 1958) КОСМИЧЕСКИЕ ДАННЫЕ *(Cosmic Data)* (monthly since 1962) *Magnetic Fields of Sunspots* (bimonthly since 1964)

USA: *Preliminary Report and Forecast of Solar-Geophysical Activity* Space Environment Services Center, NOAA, Boulder, Colorado 80303 USA (weekly) *Solar-Geophysical Data* NOAA, Boulder, Colorado 80303 USA (monthly since November 1956)

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UAG-9 "Data on Cosmic Ray Event of November 18, 1968 and Associated Phenomena," compiled by J. Virginia Lincoln, World Data Center A, Upper Atmosphere Geophysics, ESSA now NOAA, Boulder, CO, April 1970, 109 pp, $0.55.

UAG-10 "Atlas of Ionograms," edited by A.H. Shapley, ESSA Research Laboratories now NOAA, Boulder, CO, May 1970, 243 pp, $1.50.

UAG-12 "Solar-Geophysical Activity Associated with the Major Geomagnetic Storm of March 8, 1970," Parts 1, 2 and 3, compiled by J. Virginia Lincoln and Dale B. Bucknam, World Data Center A, Upper Atmosphere Geophysics, ESSA now NOAA, Boulder, CO, April 1971, 466 pp, $3.00 (includes Parts 1-3).

UAG-13 "Data on the Solar Proton Event of November 2, 1969 through the Geomagnetic Storm of November 8-10, 1969," compiled by Dale B. Bucknam and J. Virginia Lincoln, World Data Center A, Upper Atmosphere Geophysics, ESSA now NOAA, Boulder, CO, May 1971, 76 pp, $0.90.

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UAG-28 "Collected Data Reports on August 1972 Solar-Terrestrial Events," Parts 1, 2 and 3, edited by Helen E. Coffey, World Data Center A for Solar-Terrestrial Physics, NOAA, Boulder, CO, July 1973, 932 pp, $4.50.

UAG-29 "Auroral Electrojet Magnetic Activity Indices AE(11) for 1968," by Joe Haskell Allen, Carl C. Abston and Leslie D. Morris, National Geophysical and Solar-Terrestrial Data Center, Boulder, CO, October 1973, 148 pp, $0.75.

UAG-30 "Catalogue of Data on Solar-Terrestrial Physics," prepared by NOAA Environmental Data Service, Boulder, CO, October 1973, $1.50. Supersedes UAG-11, 15, and 20 catalogs.

UAG-31 "Auroral Electrojet Magnetic Activity Indices AE(11) for 1969," by Joe Haskell Allen, Carl C. Abston and Leslie D. Morris, National Geophysical and Solar-Terrestrial Data Center, Boulder, CO, February 1974, 142 pp, $0.75.

UAG-32 "Synoptic Radio Maps of the Sun at 3.3 mm for the Years 1967-1969," by Earle B. Mayfield, Kennon P. White III, and Fred I. Shimabukuro, Aerospace Corp., El Segundo, CA, April 1974, 26 pp, $0.35.

UAG-33 "Auroral Electrojet Magnetic Activity Indices AE(10) for 1967," by Joe Haskell Allen, Carl C. Abston and Leslie D. Morris, National Geophysical and Solar-Terrestrial Data Center, Boulder, CO, May 1974, 142 pp, $0.75.

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UAG-37 "Auroral Electrojet Magnetic Activity Indices AE(10) for 1966," by Joe Haskell Allen, Carl C. Abston and Leslie D. Morris, National Geophysical and Solar-Terrestrial Data Center, Boulder, CO, December 1974, 142 pp, $0.75.

UAG-38 "Master Station List for Solar-Terrestrial Physics Data at WDC-A for Solar-Terrestrial Physics," by R.W. Buhmann, World Data Center A for Solar-Terrestrial Physics, Boulder, CO; Juan D. Roederer, University of Denver, Denver, CO; and M.A. Shea and D.F. Smart, Air Force Cambridge Research Laboratories, Hanscom AFB, MA, December 1974, 110 pp, $1.60.

UAG-39 "Auroral Electrojet Magnetic Activity Indices AE(11) for 1971," by Joe Haskell Allen, Carl W. Abston and Leslie D. Morris, National Geophysical and Solar-Terrestrial Data Center, Boulder, CO, February 1975, 144 pp, $2.05.

UAG-40 "H-Alpha Synoptic Charts of Solar Activity for the Period of Skylab Observations, May 1973 - March 1974," by Patrick S. McIntosh, NOAA Space Environment Laboratory, Boulder, CO, February 1975, 32 pp, $0.56.

UAG-41 "H-Alpha Synoptic Charts of Solar Activity During the First Year of Solar Cycle 20 October 1964 - August 1965," by Patrick S. McIntosh, NOAA Space Environment Laboratory, Boulder, CO and Jerome T. Nolte, American Science and Engineering, Inc., Cambridge, MA, March 1975, 25 pp, $0.48.

UAG-42 "Observations of Jupiter's Sporadic Radio Emission in the Range 7.6-80 MHz, 10 December 1971 through 21 March 1975," by James W. Warwick, George A. Dulk and Anthony C. Riddle, University of Colorado, Boulder, CO, April 1975, 49 pp, $1.15.

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UAG-48A "Synoptic Observations of the Solar Corona during Carrington Rotations 1580-1596 (11 October 1971 - 15 January 1973)," [Reissue of UAG-48 with quality images], by R.A. Howard, M.J. Koomen, D.J. Michels, R. Tousey, C.R. Detwiler, D.E. Roberts, R.T. Seal, and J.D. Whitney, U.S. Naval Research Laboratory, Washington, DC, and R.T. Hansen and S.F. Hansen, C.J. Garcia and E. Yasukawa, High Altitude Observatory, NCAR, Boulder, CO, February 1976, 200 pp, $4.27.

UAG-49 "Catalog of Standard Geomagnetic Variation Data," prepared by NOAA Environmental Data Service, Boulder, CO, August 1975, 125 pp, $1.85.

UAG-50 "High-Latitude Supplement to the URSI Handbook on Ionogram Interpretation and Rediction," edited by W.R. Piggott, British Antarctic Survey, c/o Appleton Laboratory, Slough, UK, October 1975, 294 pp, $4.00.

UAG-51 "Synoptic Maps of Solar Coronal Hole Boundaries Derived from He II 304A Spectroheliograms from the Manned Skylab Missions," by J.D. Bohlin and D.M. Rubenstein, U.S. Naval Research Laboratory, Washington, DC, November 1975, 30 pp, $0.54.

UAG-52 "Experimental Comprehensive Solar Flare Indices for Certain Flares, 1970-1974," by Helen W. Dodson and E. Ruth Hedeman, McMath-Hulbert Observatory, University of Michigan Pontiac, MI, November 1975, 27 pp, $0.60.

UAG-53 "Description and Catalog of Ionospheric F-Region Data, Jicamarca Radio Observatory (November 1966 - April 1969), by W.L. Clark and T.E. Van Zandt, NOAA Aeronomy Laboratory, Boulder, CO, and J.P. McClure, University of Texas as Dallas, Dallas, TX, April 1976, 10 pp, $0.33.

UAG-54 "Catalog of Ionosphere Vertical Soundings Data," prepared by NOAA Environmental Data Service, Boulder, CO, April 1976, 130 pp, $2.10.

UAG-55 "Equivalent Ionospheric Current Representations by a New Method, Illustrated for 8-9 November 1969 Magnetic Disturbances," by Y. Kamide, Cooperative Institute for Research in Environmental Sciences, University of Colorado, Boulder, CO; H.W. Kroehl, Data Studies Division, National Geophysical and Solar-Terrestrial Data Center, Boulder, CO; M. Kanamitsu, Advanced Study Program, National Center for Atmospheric Research, Boulder, CO; Joe Haskell Allen, Data Studies Division, National Geophysical and Solar-Terrestrial Data Center, Boulder, CO; and S.-I Akasofu, Geophysical Institute, University of Alaska, Fairbanks, AK, April 1976, 91 pp, $1.60 (microfiche only).

UAG-56 "Iso-intensity Contours of Ground Magnetic H Perturbations for the December 16-18, 1971, Geomagnetic Storm," Y. Kamide, Cooperative Institute for Research in Environmental Sciences, University of Colorado, Boulder, CO, April 1976, 37 pp, $1.39.

UAG-57 "Manual on Ionospheric Absorption Measurements," edited by K. Rawer, Institut fur Physikalische Weltraumforschung, Freiburg, GFR, June 1976, 302 pp, $4.27.

UAG-58 "ATS6 Radio Beacon Electron Content Measurements at Boulder, July 1974 - May 1975," by R.B. Fritz, NOAA Space Environment Laboratory, Boulder, CO, September 1976, 61 pp, $1.04.

UAG-59 "Auroral Electrojet Magnetic Activity Indices AE(11) for 1974," by Joe Haskell Allen, Carl C. Abston and Leslie D. Morris, National Geophysical and Solar-Terrestrial Data Center, Boulder, CO, December 1976, 144 pp, $2.16.

UAG-60 "Geomagnetic Data for January 1976 (AE(7) Indices and Stacked Magnetograms)," by Joe Haskell Allen, Carl C. Abston and Leslie D. Morris, National Geophysical and Solar-Terrestrial Data Center, Boulder, CO, July 1977, 57 pp, $1.07.

UAG-61 "Collected Data Reports for STIP Interval II 20 March - 5 May 1976, edited by Helen E. Coffey and John A. McKinnon, World Data Center A for Solar-Terrestrial Physics, Boulder, CO, August 1977, 313 pp, $2.95.

UAG-62 "Geomagnetic Data for February 1976 (AE(7) Indices and Stacked Magnetograms)," by Joe Haskell Allen, Carl C. Abston and Leslie D. Morris, National Geophysical and Solar-Terrestrial Data Center, Boulder, CO, September 1977, 55 pp, $1.11.

UAG-63 "Geomagnetic Data for March 1976 (AE(7) Indices and Stacked Magnetograms)," by Joe Haskell Allen, Carl C. Abston and Leslie D. Morris, National Geophysical and Solar-Terrestrial Data Center, Boulder, CO, September 1977, 57 pp, $1.11.

UAG-64 "Geomagnetic Data for April 1976 (AE(8) Indices and Stacked Magnetograms)," by Joe Haskell Allen, Carl C. Abston and Leslie D. Morris, National Geophysical and Solar-Terrestrial Data Center, Boulder, CO, February 1978, 55 pp, $1.00.

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